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A Sociolinguistic Study of Language Contact of Lebanese Arabic and Brazilian Portuguese in São Paulo

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A Sociolinguistic Study of Language Contact of Lebanese Arabic and Brazilian Portuguese in São Paulo

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Dedication

To my parents, Wayne and Elaine Guedri, and to my grandmother- you gave me the three tools I needed to complete this work- philosophy, discipline and religion.

I never look at the masses as my responsibility. I look only at the individual.
Only one is required.

-Mother Teresa

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A Sociolinguistic Study of Language Contact of Lebanese Arabic and Brazilian Portuguese in São Paulo

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Languages that borrow Arabic words often incorporate redundant, non-lexical material (Myers Scotton 2002, Rouchdy 2002). Examples can be drawn from words of Arabic origin in the Portuguese language (Kaye 2004, Corriente 1992). The aim of this study is to explore different aspects language variation due to language contact and transfer. This study takes into consideration loanword adaptations and examines three generations of Lebanese-Brazilians living and São Paulo.

While many factors account for phonological variation in the production of Brazilian Portuguese, one of the goals of this study is to show how prior language experiences can influence variation in the perception and production of another. In

exploring three generations in the Lebanese-Brazilian community of São Paulo, Brazil, first-generation immigrants are believed to have more variability in their spoken Portuguese, with this variability extending to loanwords of Arabic origin. Subsequent generations are believed have less access to the Arabic language, and have less variability in their spoken Portuguese, however are expected to experience some influence of Arabic when perceiving and producing words of Arabic origin.

Table of Contents

List of Tables

List of Figures

1. Introduction

Variability of Brazilian Portuguese spoken in the Lebanese-Brazilian community in São Paulo is exemplified in this study. In addition to sociological factors, this study relates variation in the production of Brazilian Portuguese to linguistic experience and word frequency in this linguistic community. Observations gathered in this population reveal that Arabic language maintenance and usage vary in three generations of Lebanese Brazilians. Phonological variation, primarily in assimilatory phenomena, is found to occur in the production of Brazilian Portuguese of first generation of this community and variability in production extends to words of Arabic origin. Findings from this research link variability to perception in some cases, but not all.

This chapter serves as an introduction to some of the assumptions that are believed to affect phonological variation of speakers whose first language (L1) is Lebanese Arabic (LA) and whose non-native language (NNL) is Brazilian Portuguese (BP). The chapter begins by addressing about language contact and reviewing some of the issues regarding loanwords of Arabic origin. Then the differences in the sound inventories of Portuguese and Arabic are explored within their historical contexts. The end of this chapter provides a framework for the research that explores variability of Brazilian Portuguese in the Lebanese-Brazilian community in São Paulo.

1.1 LANGUAGE CONTACT AND VARIATION

There is a direct correlation between language contact and language change and variation (Winford 2002). Language change fluctuates depending on the intensity of the interaction between linguistic and non-linguistic variables (Weinreich 1953). Sociolinguistics, a branch of linguistics that analyzes the relationship between language and society, points to variation in groups triggered by the individual (Labov 1973). Non-linguistic, external motivations stemming from political, economic, religious and educational sources affect the way that language is used in a society as well (Thomason 2001). During contact, these sociological factors may also influence linguistic differences between languages in areas such as phonology, morphology, syntax and semantics (Silva Corvalán 1995). The following sections illustrate how sociological and linguistic factors affect language change and variation by providing examples from loanwords that have been incepted from Arabic into Portuguese.

Historically, language has been affected by policy. Linguistic unification or plurality has frequently resulted from one group gaining power over another. Language contact has also stemmed from migration of individuals or groups because of shifts in political power. Political events have often influenced language contact in the creation of policies that can affect language use and maintenance. In addition, war is often a cause of displacement of people and has tremendous linguistic ramifications, as seen in the example of increased Vietnamese migration and language usage in the United States following the Vietnamese War.

Economic factors also shape language use and contact. Because global markets have allowed several linguistically diverse groups to come together, decisions must often be made about how these groups will communicate (Thomason 2001). Factors affecting linguistic decisions may be tailored to the needs of the group that has the most influence and not necessarily the majority, resulting in the abandonment of regional languages or languages of the less powerful. In cases of business or trade, the use of English as a *lingua franca* in international markets serves as an example of how one language is used over another.

According to Bernard Spolsky (2003), little has been explored in the area of religion and language contact because of the sensitivity of its nature. He suggests that in the recent years, religious ties to language have become increasingly more important to the field of linguistics, with such items as scripts, taboos, and blasphemy being brought to the forefront (Spolsky 2003). In some religions, there is a stance on language and an official language is designated for worship, despite linguistic diversity among believers (Ferguson 1959, Fishman 1967). Liturgical use of language can be illustrated with the use of Latin in Roman Catholicism or the use of Arabic in Islam. Another example of religion affecting language use occurs when followers of a certain faith emigrate from one place to another. When this occurs, worship may result in services in the native language, new language, or a combination of both.

Finally, another important social factor affecting language contact is education. Access to educational or employment opportunities often serve as a motivation for migration from one place to another. This access to educational opportunities, in turn

affects linguistic performance both in a native language and in a non-native language. It has been suggested that second language acquisition, or non-native language acquisition, occurs in the same way a person acquires his or her native language as a child (Krashen 1988). A natural progression in acquiring language proficiency may include understanding, speaking, writing, and reading (Ellis 2006). If an individual possesses strengths in one competency over another in his or her first language, because of education different rates of proficiency may result in the non-native language. In addition, formal instruction in a native language or one that is acquired is another factor that can affect production of oral language. Because previous language experience affects the newly acquired one, language acquisition is related to language maintenance.

1.2 LOANWORD ADAPTATIONS AND VARIATION

The same sociological variables that are cited as bringing about language contact- politics, economics, education, religion- are also reflected categorically in the type of loanwords that are borrowed from one language into another, as reflected in the Table 1.1. A commonality found in all of these loanwords in this table is that in each example provided, pronunciation of the lending language is different from that of the borrowing one. While the types of words that are incepted into language may reflect sociological motivations, sociological and linguistic factors may influence the type of variation that occurs when these loanwords are adapted from one language to another.

Table 1.1: Arabic Loanwords in Brazilian Portuguese

Portuguese word	Arabic Transcription (lending language)	Brazilian Portuguese Transcription (borrowing language)	Gloss	Sociological category
taifa	[ˈt̪ai.fə]	[ˈtai.fə]	Muslim ruled principality	political
dinar	[diˈnar]	[dʒiˈnaɾ]	currency	economic
mufti	[ˈmuf.ti]	[ˈmu.fi.tʃi]	interpreter of Islamic law	religious
algoritmo	[al.go.ˈri.ti.mo]	[aw.go.ˈxi.tʃi.mʊ]	mathematically ordered list	educational

The borrowing of words from one language into another is one of the most common effects of language contact and reflects such linguistic adjustments triggered by sociological factors (Higa 1979). In addition, linguistic areas such as phonology, morphology, syntax and semantics play a variable role in the way that loanwords are produced. The following section addresses how sociological and linguistic factors contribute to variability in the production of loanword adaptations. In addition, the way in which linguistic meaning in one language affects perception in another is explored. All cases used to address this point from here on out will be illustrated by Arabic loanwords found in the Portuguese language.

1.2.1 Phonology

Linguistic differences across languages may further trigger language change and impact variability in production. In addition, while sociological factors affect variability in the production of language, speaker experience may also affect perception and influence production (Bybee 2006). When the borrowing language does not possess a sound that the lending language contains, a speaker may modify his speech in some way that most approaches what is familiar. This is demonstrated in Table 1.2 with an example provided by a native Lebanese Arabic speaker in Brazil (Fralha 2007). This data indicates that in the production of Brazilian Portuguese word, *primo*, the speaker makes a phonological adjustment. Since /p/ is not part of the sound inventory in the speaker's native language, Arabic; /b/, which is another bilabial stop existing in the phonology of his native language, is substituted since it most approximates the target sound. The sound /p/ is present in the sound inventory of French, a language with which Lebanon has had contact. A question that arises is whether experience with other languages would affect acquisition of sounds in another.

Table 1.2: Phonological Adjustment-Segmental

Portuguese word	Arabic Transcription	Portuguese transcription	Gloss
primo	[bri.mo]	[pri.mu]	cousin

Another way in which phonological conflict may result when two languages come into contact is due to differences in phonotactics, the allowable combination of sound

clusters in a given language. In the following example (Nabhan 1989) found in Table 1.3, a speaker whose native language is Lebanese Arabic adjusts the pronunciation of Brazilian Portuguese by making a phonotactic adjustment. In Arabic, the consonantal cluster /bl/ is not naturally occurring nor is it frequent. When this speaker is faced with emitting /bl/ in the word *blusa,* in an effort to maintain the phonotactic properties of the native language, Arabic, the speaker inserts an epenthetic vowel and in effect breaks this cluster.

Table 1.3: Phonological Adjustment- Phonotactic

Portuguese word	Arabic Transcription	Portuguese Transcription	Gloss
blusa	[ba.'lu.za]	['blu.zə]	blouse

Phonological issues affecting languages in contact, and specifically loanwords, are not limited to segmental items such as consonants and vowels as mentioned in the previous examples. Non-segmental, prosodic material such as intensity, intonation, and accentuation may also differ across languages and be transferred in loanwords. In the same way that restrictions may exist for the production of certain sound combinations in a given language, prosodic material is also subject to conflict and variability when languages come into contact. The following examples illustrate how placement of primary stress varies between the lending and borrowing language and produces change. In Arabic, in the word *álgebra*, primary stress occurs in the penultimate syllable while in Portuguese; primary stress in this Arabic loanword occurs in the antepenultimate syllable.

Table 1.4: Phonological Adjustment- Prosodic

Portuguese word	Arabic Transcription	Portuguese Transcription	Gloss
álgebra	[al ˈʒa.bir]	[ˈaw.ʒe.bɾə]	algebra

Both segmental and non-segmental factors affect production when languages come into contact. Additionally, dialectal variation in either the lending or borrowing language can influence the way the word is produced and perceived. The following example shows how multiple possibilities exist for the production of an Arabic loanword in Brazilian Portuguese.

Table 1.5: Phonological Adjustment- Segmental, Prosodic and Phonotactic

Portuguese word	Arabic transcription	Portuguese Transcription	Gloss
mufti	[ˈmuf.tɪ]	[ˈmuf.tɪ] [ˈmuf.tʃɪ] [ˈmu.fi.tʃɪ]	Islamic cleric

In this example, variability exists in the way that a loanword could be produced due to dialectal variation in the borrowing language. In some dialects of Brazilian Portuguese, including the variety spoken in the capital of the state of São Paulo, alveolar stops are variably palatalized before high front vowels because of lexical diffusion (Cristófaro and Oliveira 2008). In Table 1.5, some of the possibilities that exist for the production of a loanword due to dialectal variation in Brazilian Portuguese are presented. In Table 1.6, the difference between palatalization and non-palatalization in voiced and unvoiced dental stops is introduced is explained.

Table 1.6: Palatalization of Dental Stops

Dental stop	Dentral stop preceding high front vowel	Palatalization of dental stop preceding high front vowel
/d/	/ˈdɪ/	/ˈdʒɪ/
/t/	/ˈtɪ/	/ˈtʃɪ/

One of the aims of this research is to provide further evidence that lexical items do affect phonological variability in phenomena such as assimilation. A loanword possessing a phonological environment that satisfies the conditions for assimilation to occur may not undergo assimilation by a speaker if the word is perceived to be from a specific origin or belong to a certain category. Furthermore, if the speaker possesses knowledge that the type of assimilation in question does not occur in the language from which the loanword originates, then the speaker may not assimilate. The hypothesis is that perception, in the form of linguistic knowledge, affects production. Specifically, if a Brazilian Portuguese speaker has knowledge of the Arabic language but is not a native speaker of Arabic, he or she may use this linguistic knowledge to affect his or her production of a word of Arabic origin. This hypothesis implies that the speaker may maintain elements of the original pronunciation in Arabic and in doing so not assimilate as he or she normally would, because of the origin of this word. Therefore, a factor affecting palatalization in a word, such as *mufti* is that in Arabic, palatalization does not

occur in the phonological environment described. When producing this word, a consequence of access to Arabic phonology is that speakers will not assimilate.

In the example of the loanword *mufti*, aside from possible variation in the production of palatalization, phonotactic differences across languages may also influence inconsistent production of sound patterns. In Brazilian Portuguese, the consonantal cluster /ft/ is not common. When infrequent consonantal clusters occur, an epenthetic vowel is often inserted in an effort to break the cluster (Simões 2008). An example of this phenomenon is provided in Table 1.7.

Table 1.7: Epenthesis in Brazilian Portuguese

Portuguese word	Portuguese transcription	Portuguese transcription with epenthetic vowel	Gloss
Afta	['af.tə	['a.fɪ.tə]	acid
Naftalina	[naf.ta.'li.nə	[na.fɪ.'ta.li.nə]	mothball

In a word such as *mufti*, it is questionable whether the insertion of an epenthetic vowel to break a non-frequent consonantal cluster or assimilation, such as palatalization of /t/ would occur since neither phenomenon is native to Arabic phonology and *mufti* is an Arabic loanword.

In the example of the word *mufti* and other loanwords of Arabic origin that contain segments capable of undergoing assimilation in Brazilian Portuguese, awareness

of the word origin could affect the way language change occurs. In this specific case, perception of word origin may be hindered by multiple phonological changes that occur in Portuguese but not in Arabic, such as palatalization, the addition of a new syllable and shift of primary stress from the penultimate to the antepenultimate syllable.

While sociological factors are cited to affect variation in the production of sounds in isolation as well as in patterns, examples have been given that relate linguistic knowledge to the relationship between perception and production. In speakers who have experience in the language from which the loanword originates, morphological, syntactic and semantic meaning retained from the lending language can be associated with certain sounds and recognized by a speaker, resulting in further phonological variability. The following section continues to use loanwords of Arabic origin to explore how phonological variability is affected by grammatical knowledge in the lending language.

1.2.2 Morphology

Non-lexical, morphological material is often carried over from one language to another when loanwords are borrowed. For a speaker who has no experience with the lending language from which the loanword originates, there may be no meaning associated with this material. However, if a speaker does have experience in the language from which the loanword originates, morphological meaning could be retained and reflected in the way this loanword is produced in the borrowing language, as suggested in grammaticalization (Hopper and Traugott 2003, Bliss 2006) and is illustrated in the following example:

Table 1 8: Morphological Redundancy in Language Contact

Arabic-IPA transcription	al.'ʒa.bir 's?b.
Gloss	The algebra difficult
Portuguese-IPA transcription	a 'al.ʒe.brə 'ɛ di.fi.'siw
Gloss	*The álgebra is difficult*

In this example, perception of morphological redundancy is suggested to influence production of a loanword in a non-native language. In the noun phrase, *a álgebra*, the Portuguese feminine definite article *a* precedes *álgebra.* The loanword *álgebra* contains the prefix al-, which in Arabic is one of the ways to represent the definite article. In this case, phonologically similar and morphologically identical material from two languages adjacently appears in the same noun clause. One hypothesis is that a speaker with knowledge of both Arabic and Portuguese may adjust the way in which this noun phrase is produced by omitting the Portuguese definite article or adjusting production of the segment al- in an effort to avoid redundancy of definiteness.

Another point illustrated in this example is that in the case of the loanword *álgebra,* the gender of this word in the borrowing language is different from that of the lending language. In Arabic, *al-jabr* appears as a masculine noun, however in Brazilian Portuguese, *álgebra* ends in /a/, which is the default feminine morpheme in this language.

For a speaker who has experience with the Arabic language, morphological redundancy may affect production of the final syllable of this word in Portuguese. Since the sound /a/ connotates feminine morpheme in Arabic, a speaker with Arabic and Portuguese experience may be conflicted in the way to produce the last syllable of this word because of redundancy of gender.

1.2.3 Syntax

Syntax can be defined as the structure of sentences. While a relationship has been established between phonological and morphological changes yielding to morpho-phonological changes in language contact, a similar one has been observed between morphology and syntax (Lightfoot 2002), resulting in a subfield of linguistics called morphosyntax. In the contact between Lebanese Arabic and Brazilian Portuguese, especially in the case of complex borrowings, pronunciation of loanwords may be variable based upon whether or not a morphosyntactic meaning from Arabic is retained by the speaker. Since syntactic structure from the mother language or substratum is retained in the following loanword, phonological variation is possible due to conflict in morphosyntactic elements across languages.

Table 1.9: Grammaticalization and NNL Phonology

Language	IPA transcription	Gloss
Portuguese	[ˈʃe.kɪ ma.tʃɪ]	'checkmate'
Arabic	[ˈʃek.mat]	'the king is captured'

This loanword is an illustration of how multiple language contacts can be a factor affecting variability in loanword production. In the loanword *xeque-mate*, syntactic structure and semantic meaning is retained from Arabic and Persian, (Moghadam 1938) where the word is said to have originated. This loanword, an example of a complete sentence, in Persian, maintains its original sentence structure in the complex borrowing in Arabic and this structure is transferred when the word is borrowed from Arabic into Portuguese. In Portuguese, the word exists as a noun. Since the original syntax of the phrase is preserved in the loanword, phonological adjustments in Brazilian Portuguese may affect how the word is perceived or produced by a speaker who has knowledge of Arabic if this word is produced in a sentence.

Another possible scenario is that the word *xeque-mate* could undergo phonotactic adjustments such as epenthesis, where the obstruent in syllable final position is followed by a high vowel [ʃe.**kɪ** ma.**tʃɪ**]. A speaker with Arabic language experience may internalize meaning due to this change since /**ɪ**/ at the end of a noun in Arabic indicates possession. In the event that grammaticalization occurs, a speaker with Arabic language experience may vary production of this word and not incorporate the Brazilian

Portuguese phenomenon of epenthesis and palatalization in an effort not to relay morphological meaning from Arabic.

These two loanwords exemplify how NNL phonology can be affected by implied meaning in L1. The examples of *álgebra* and *xeque-mate* explore how perception and production of loanwords may be variable in a person that has knowledge of Arabic and Portuguese. In the case of the word *álgebra,* morphological material from Arabic in the prefix al- is carried over into Portuguese and could be grammaticalized. While vocalization, the process of the phoneme /l/ becoming /w/ following a vowel, is common throughout all of Brazilian Portuguese, it is questionable whether a person with Arabic language experience would vocalize /l/ in this loanword and others given that the sound may have implied linguistic value in the lending language.

In the case of *xeque-mate*, while the same prefix al- is not carried over in the loanword when incepted into Portuguese from Arabic, interpretation of definiteness is possible. Both assimilation and epenthesis could have an impact on perception of definiteness because of meaning the epenthetic sound implies in Arabic. As a result, this knowledge could affect how someone with Arabic language experience produces the final syllable of this word in Portuguese.

1.2.4 Semantics

Semantic change is another factor that can trigger phonological variability in the production of loanword adaptations. A speaker who is familiar with the language from

which a loanword originates may not recognize a loanword due to the fact that semantic meaning and usage differ from that of the lending language. Semantic perception of a loanword may affect how that word is produced. An example is provided in *arroba*, another word of Arabic origin found in the Portuguese lexicon.

Table 1.10: Phonological Variation-Semantic Shift

Portuguese word	Arabic transcription	Portuguese transcription	Gloss
arroba	[ar'ru.bʕ]	[a'xo.bə]	@ (at)
		[a'ro.bə]	A measurement of weight

In Classical Arabic, *arroba* refers to a measurement of weight, which is equal to fifteen kilograms, and this meaning is reflected in 16th century Portuguese texts. However, over time, the connotation associated with this word has been broadened. In Brazilian Portuguese, a frequent use of this word refers to an electronic server, commonly represented by the symbol @, that is used in electronic mail. This is not the same word used in Arabic to express the same meaning. Depending on what the speaker understands the intended meaning of this word to be, someone that has Arabic language experience, as is illustrated in Table 1.9 may produce this Arabic loanword variably. In this example, variation in velarization of /ɾ/ is suggested to be dependent on loanword perception.

In this section, sociological and linguistic factors are related to phonological variability in loanword adaptations. Three types of assimilation native to Brazilian Portuguese, palatalization, vocalization and velarization are introduced. These

phonological adjustments are proposed to be variable in the production of loanwords of Arabic origin depending on the degree of language experience with both languages that a speaker may have. Portuguese is a language with a high preponderance of Arabic loanwords, most of which were incepted diachronically. Synchronically, there has been a sustained contact between Brazilian Portuguese and Lebanese Arabic in São Paulo, where varying degrees of Arabic language usage exist. While Arabic language transfer may be expected to affect the production of Brazilian Portuguese among native speakers of Arabic, varying degrees of Arabic language experience also could influence the perception and production of words of Arabic origin in Portuguese by speakers who are not originally from Lebanon.

1.3 Synchronic and Diachronic Accounts of Arabic and Portuguese

Arabic and Portuguese have been in contact in many different contexts. In this section, first some general properties and historical background of both languages are given. Then, the factors that caused these languages to come into contact are introduced with a focus on how Levantine Arabic from Lebanon encountered Brazilian Portuguese for over 150 years in São Paulo, Brazil. Next, differences in the ways that sounds are produced in these two languages and how variation may result during contact are discussed. Finally, justification for the examination of variability in the production of loanwords of Arabic origin in this population is provided.

Arabic is a Semitic language with a rich linguistic history. Although it has undergone a myriad of contact situations over several centuries, the written language has

retained its structure with very little change, whereas the spoken language has undergone significant dialectal variation. One of the primary reasons for consistency in the written language is that the classical form of Arabic is the religious language used in Islam. *The Quran*, the sacred book that includes the teachings to which Muslims adhere, makes specific reference as to how the Arabic language of the holy book should be preserved, as it was the language in which the message was revealed to the prophet Muhammad. In the seventh century, a mandate was given to prepare a standardized version in order to preserve the sanctity of the text and to establish a final text.

Modern Standard Arabic serves as a norm in writing across dialects since the spoken language varies so greatly. Dialects of Arabic including Egyptian and Gulf Arabic differ from other varieties such as Maghrebi Arabic of North Africa (Abboud 1970) and Levantine Arabic (LA), which is spoken in Jordan, Syria, Lebanon and Palestine (Holes 2004). Given dialectal variation of Arabic and the influence of Islam in all Arabic speaking countries, it is common for speakers of Arabic to have knowledge of more than one form of Arabic. Diglossia, or the switching between registers, has been reported widely in speakers of Arabic, given certain sociological variables (Ferguson 1959, Fishman 1967). Levantine Arabic, the variety used in Lebanon, is the dialect referred to when discussing contact with the Portuguese language in Brazil.

Like the standard form of Arabic, Portuguese is derived from a classical language, Latin, which also had divergent written and spoken forms. However, centuries ago when spoken Latin spread across territories primarily in the geographical area today known as Europe, it came into contact with the other languages already spoken in these regions,

and eventually this contact triggered the creation of Romance languages which originated in present day Romania, Italy, France, Spain and Portugal (Harris and Vincent 1988).

Modern-day Portugal is both the geographic region farthest removed from where Latin originated, and the place where Portuguese developed. Portuguese did not stay within the confines of the Iberian Peninsula, but spread to Asia, Africa and the Americas as a result of exploration and colonization. Presently, Brazil is the country with the most Portuguese speakers. As with the case in Arabic, there is a substantial amount of variation between written and spoken Portuguese in Brazil as well as in Portugal and other Lusophone countries. Moreover, within Brazil, a great deal of spoken dialectal variation exists (Cristófaro Silva 2001).

It has been proposed that one of the reasons for variation in Brazilian Portuguese is the fact that the country is comprised of a large area and the language has been in contact with hundreds of languages both indigenous to the geographic area of Brazil and not in the past and the present (Roncarati 2003, Mattos e Silva 2004). Arabic is among the languages in contact with Portuguese, both diachronically and synchronically. However, the effects of this contact on variation on spoken Brazilian Portuguese have not been addressed. Therefore, a study that examines phonological variation as a result of language contact is justified.

1.3.1 Contact of Arabic and Portuguese

In order to examine the current language contact between Lebanese Arabic and Brazilian Portuguese, it is necessary to address previous contacts between these two

languages. The existence of Arabic loanwords in the Portuguese lexicon provides evidence that significant contact between these languages has occurred in the past. Estimates of the number of loanwords that originate from Arabic in Portuguese vary from eight hundred (Houiass 1993) to two thousand (Franca 1994). Although Arabic loanwords are plentiful in the Portuguese language, little is actually known about how the languages came into contact and why variation exists in these words. For example, some loanwords retain morphemes such as a- and al- from the lending language while others do not (Corriente 1977). Dictionaries have been created that indicate words of Arabic origin in Portuguese (Dozy and Engelmann 1869) and later studies have considered semantic categories of these loanwords as significant (De Sousa 1981). Inconsistency in the appearance of non-lexical, linguistic material triggering morphological change has not been adequately explained.

Multiple language contacts could be one of the reasons for the inconsistencies that exist in loanwords that are borrowed from Arabic. Contact between Arabic and Portuguese has occurred both directly and indirectly, thereby creating different sociological motivations for interaction. Different groups of Arabic speakers came into the Iberian Peninsula from diverse parts of the Arabic-speaking world over several centuries. It is believed that most Arabic speakers left the area that now comprises Portugal in the 13th century, earlier than when these groups were dispersed from the area encompassing modern-day Spain. In some instances, Arabic entered Portuguese via Spanish as an intermediary (Houiass 1986). Since some loanwords were directly borrowed from Arabic and others were indirectly borrowed, this may serve as a reason

for variation in the way that these words were incepted into the Portuguese language (Azevedo 2005).

1.3.2 Contact Outside of the Iberian Peninsula

While the contact between Arabic and the precursors of Portuguese in the Iberian Peninsula is noted as being one of the most prolonged direct contact situations, it is certainly not the only one. The Portuguese language, like Arabic, left the confines of its geographic center and came into contact with many other languages outside of Portugal. With the Portuguese possessing extensive naval forces throughout the 12th through 17th centuries, many expeditions resulted in the opportunity for contact between these two languages. Some of these seldom-mentioned encounters in which Arabic and Portuguese speakers came into contact occurred in the Emirates, Egypt and Oman in the 16th century, and the South Arabian coast in the 17th century (Ziolkowski 1999). Another example can be found in southeastern Africa, where Portugal gained control in late 17th century over all the former Arab sultanates, including cities in present day Kenya, Tanzania and Mozambique.

With shifts in power in the early 18th century and African revolts, Portugal became less concerned with its colonies in Africa and turned its attention to Goa on the Indian subcontinent, which was valuable for the spice trade. Portugal later focused its energy almost entirely on its resources in Brazil (Danvers 1966). It was in Brazil that Arabic and Portuguese came into contact during the 19th century through Syrian and Lebanese migration to that region.

Sustained Lebanese migration in Brazil constitutes significant contact between the Arabic and Portuguese languages. While sociological factors have been explored which affected Lebanese migration to Brazil (Gattaz 2006), little has been discussed concerning the linguistic ramifications that this contact has brought about in terms of phonological variation and usage of these languages. The following research questions intend to bring sociolinguistic issues to the forefront by addressing variability in spoken Brazilian Portuguese among members of the Lebanese-Brazilian community.

1.4 RESEARCH DESIGN

The variations in the way that loanwords of Arabic origin have been incepted into Portuguese have been attributed to both sociological and linguistic factors. Few synchronic studies address how Arabic and Portuguese have been in contact, and specifically how Arabic currently affects the Portuguese language in Brazil (Simão 1993). While Arabic language use has been studied in the Lebanese-Brazilian community (Salawdeh 1997), it is only in bilinguals that code-switching has been examined between these two varieties of Arabic and Portuguese in São Paulo (Nabhan 1989). Variability in the spoken Brazilian Portuguese of this population has yet to be explored adequately. Finally, no study reports on the potential variability in the production of loanwords of Arabic origin in a community that has access to the phonology of the lending and borrowing languages. Given this unique situation, the following research questions are asked:

Research Question #1: Is there variation in the usage of Arabic within the Lebanese-Brazilian community in São Paulo?

Research Question #2: In first-generation Lebanese Brazilians, is there evidence for phonological variability in the production of Brazilian Portuguese, and does this extend to words of Arabic origin?

Research Question #3: In the first generation, is the perception of the origin of Arabic loanwords variable and does perception affect phonological variability in production?

1.5 METHODOLOGICAL ISSUES

Independent variables

Given the sustained contact between Arabic and Portuguese in São Paulo, it is necessary to identify factors that may affect variation in production of both languages in question. The following factors have been cited as contributing to phonological variation in language contact and variation studies and will be considered in this research:

a. Sociological factors

age (Heye 2003)

gender (Sachs and Erikson 1973)

education (Mesthrie, Swann, Deumert and Leap 2000)

b. Perception and Production (Ohala 1981, Smith 2006)

c. Type of word (Bybee 2006)

d. Type of speech (Labov 1973, Lindblom 1991)

e. Group vs. individual (Stevens 1972, Carlisle 2005)

f. Generational membership (Parlato 2007)

Analysis of Data

Both quantitative and qualitative methods are utilized to address variation in this experiment. Statistical analyses will be used that can quantify the relationship between variables: ANOVA will be used to examine the relationship between multiple variables, while cross tabulations and t-tests will be used to examine how one variable affects another. In an effort to address variation of the individual, case studies and subject commentaries are included in the analysis.

1.6 Organization of Chapters

This chapter has served as an introduction to the dissertation. The rest of the dissertation is organized as follows: Chapter Two reviews the literature addressing language contact, specifically examining contact Lebanese Arabic with Brazilian

Portuguese in São Paulo, Brazil. Linguistic outcomes of language contact and fundamental differences of the two languages that may contribute to conflict are referenced. In addition, inconsistencies occurring in loanwords incepted from Arabic into Portuguese are cited.

Chapter Three discusses the experimental design of the proposed study that addresses the influence of Arabic on Portuguese and cites phonological variation in the production of Brazilian Portuguese by native Lebanese Arabic speakers. Here, the population and variables are defined, the methods used for data are described and the outcomes of the pilot study are addressed.

Chapter Four provides a quantitative and qualitative analysis of the data. Arabic language use in Brazil is related to time of emigration as well as sociological factors. Arabic language experience is found to affect variability in the production of Brazilian Portuguese especially in speakers whose first language is Arabic and not Portuguese. Phonological variation in the production of assimilation is analyzed across lexical items and phonological environments.

Chapter Five relates this research to other studies, addresses the research questions, proposes future research and makes some concluding remarks.

2. Review of Literature

This chapter highlights studies that examine sociolinguistic variation and applies aspects of their methodology to address language contact between Lebanese Arabic and Brazilian Portuguese. Some of the fundamental phonological differences between these languages are discussed and a study that examines variation in the speech of Lebanese Brazilians is proposed.

2.1 SOCIOLINGUISTIC STUDY

One way to test if sociological variables affect a speech community is through sociolinguistic study. Such a study requires the researcher to choose models and methods, locate and select subjects and collect data (Milloy and Gordon 2003). William Labov, a pioneer in the field of sociolinguistics, found that interviews under different conditions produce varying phonological features in both individuals and groups. Sociological factors such as age, formality and type of speech were identified as contributing to variation in the same phonological environment (Labov 1973).

In the present study on phonological variation in the Lebanese-Brazilian community of São Paulo, the sample is justified by taking into account sociological factors that are believed to affect Arabic maintenance, language use and phonological variation. The factors considered include age, sex, and education. Differences in physiological aspects can affect variation in an individual. In phonetics, for example,

physical correlates of speech can be affected by anatomy. Whether a person is older or younger in age could affect the pitch or tone of one's voice. Women and men have different vocal tract anatomies; as a result of the way in which their sounds resonate can be different (Sachs and Erikson1973).

In addition, experiential differences including both age and linguistic maturity can affect language variation (Heye 2003). While choosing a population to study may involve gathering information from previous studies, researcher observation and metalinguistic commentaries from members of the speech community will be taken into consideration when determining what experiential factors may affect variation.

Analyzing different types of discourse, such as spontaneous and scripted speech, can be helpful in measuring the factors that affect variation since they provide different contexts (Carlisle 2005). The use of standardized text allows for the comparison of the same discourse across speakers. In Labovian research, the reading itself served as a distracter to divert the attention of the speaker of linguistic task. In a linguistic study, a text can incorporate certain words or sounds that are of interest in the study. Spontaneous speech is also referred to as natural speech since the speaker may feel more comfortable and not aware that he is being asked to perform a task for linguistic reasons. Natural speech is a way for a subject to ease into a situation with the sociolinguist in an informal, conversational outlet and differs from other speech styles. It is said to be the most authentic speech type that can be examined for linguistic purposes (Lindblom 1991). While Labov's study dealt with change and variation in one language in a given speech community, his methods for sociolinguistic study can be applied to analyze variation in

language contact (Hellinger 1996). In this research, both spontaneous and scripted speech samples are incorporated to explore language contact in variation study that examines the Lebanese-Brazilian community of São Paulo.

2.2 ISSUES FACING LOANWORDS

While there are many ways to examine language contact, loanwords provide one venue to address sociolinguistic variation. Uriel Weinrich was one of the first sociolinguists to address variability in loanwords and provides the following definition of words that are borrowed from one language into another:

> Borrowed words are integrated into a language over time and can be divided into two categories: simple and compound. With regards to the simple words, the most common type of interference is the outright transfer of one phonemic sequence to another. In examining compound words, there are three possibilities for language transfer in which all the elements may be transferred, all elements may be reproduced by semantic extensions or some elements may be transferred while others are reproduced (Weinreich 1953: 47).

Loanwords serve as an illustration that language transfer occurs in different ways in language contact. Variation in the way that loanwords are incepted diachronically may be linked to phonological variation in the production of loanwords in synchronic contact. In an effort to explore this relationship, sociolinguistic methods will be applied to examine Arabic and Portuguese contact. In the Lebanese-Brazilian community of São Paulo, variability in the production of loanword adaptations is one way in which this topic will be studied.

In his introduction of *Language Contact: Theoretical and Empirical Studies*, Ernst Hakon Jahn states that since the publication of Uriel Weinrich's *Languages in Contact*, (Weinrich 1953*)* the study of language contact has been extensive, but an overall theory of language contact is lacking, since empirical data from such studies cannot be formulated by one theory. In order to develop language studies, Jahn posits that case studies of language contact from around the world can help to formulate new theories involving language contact (Jahn 1992).

This research affirms that no one theory can address variation due to the non-categorical interplay between sociological and linguistic factors. Rather, this study proposes the implementation of a multi-theoretical model to address variability in language contact that incorporates both quantitative and qualitative analyses of data. Furthermore, the data that follow acknowledge that production of loanwords from a language with which a speaker has experience is susceptible to intra-speaker variability because of factors relating to perception and usage.

2.3 THEORETICAL BACKGROUND

2.3.1 Speech Accommodation and Loanword Phonology

Speech accommodation theories relate how perception and production affect the interpretation of the signal (Lindblom 1963). The Theory of Hypo and Hyper Speech, H & H theory, suggests that a speaker makes conscious decisions to adjust his speech in order to be understood by another (Lindblom 1990). For instance, body language and

signals of one speaker produce changes in tone and volume in another. Lindblom's speech accommodation theory assumes that at least two people are involved in the speech act. When applying speech accommodation theory to loanword production however, the possibility of individual adaptation of a loanword, as well as adaptation between two or more people exists. In this way, the premise of H & H Theory provides an outlet to research variability in the adaptations of loanwords in that perception of the loanword origin can be related to production, even in discourse that is not conversational.

Synchronic research on loanword adaptations has been divided into three categories: one dealing only with perception, another that takes into account only production and a final model that includes both perception and production (Smith 2006). Smith goes on to illustrate that in the perception model, perceptual factors are the primary, and perhaps the only influence determining the form of loanwords in a borrowing language. In this model, speakers of the source language have no access to the recipient language phonology because of borrower's misperception of the foreign source word (Takagi and Mann 1994, Peperkamp and Dupoux 2003). In the production model, the loan adaptation is phonological in nature and solely a product of production grammar. Perception plays only a negligible role (Gussenhoven 2000, Paradis and La Charité 1997). A combination of perceptual and phonological factors suggests that both languages have no access to the original pronunciations. In the perception and production model, the input involved with the processes on the production level is the output of the processes at perception level resulting in a changed form and as a result, source production affects how words are borrowed (Davidson 2006, Yip 2006).

Some more recent studies assume an integrated model in loanword adaptations, which are not limited to the three categories mentioned and take into consideration how external factors affect perception and production. In one approach, perceptual similarity is integrated into the production grammar where loan processes tend to maximize the perceptual similarity between the adapted form and the foreign output (Miao 2005). Other research relates word frequency to the perception of non-native phonotactics in loanword adaptations (Davidson 2007). The role of phonetic knowledge in phonological patterning has also been applied to examine external factors that have been noted to bias studies not taking these factors into consideration (Zuraw 2007). Another study assumes an exemplar model of phonology that contains predictable and redundant phonetic properties that are specified in the lexical representation while each contextual variant of a phoneme forms a separate phonetic category (Kang 2008).

The present study assumes an integrated model, closest to the model implemented by Kang. While acknowledging that in some cases speakers do have access to the original pronunciation of loanwords; the study posits that factors such as perception and relative frequency affect variation in using phonological elements that are specific to the native or non-native language. Hypotheses are tested by comparing how loanwords of Arabic origin are produced in comparison to words containing the same phonological environments but not of Arabic origin. The goals of this research are to quantify how phonological aspects from both the borrowing and lending languages are incorporated into loanword adaptations, and to relate this variation to sociological and linguistic factors.

2.3.2 Frequency and Usage

Frequency and usage are related to an individual's experience. What may be a frequent word for one person may not be for another. While two people share knowledge of the same languages, or in fact may be members of the same speech community, their experiences with these languages may differ. Different aspects of the speakers' experiences must be considered when researching loanword adaptations, since they may affect perception and ultimately production of these words. If a speaker is not familiar with a loanword, prior knowledge based on linguistic experience may affect production. On the other hand, if a word is frequent, a speaker may be influenced by the way he or she has heard it used and produce it in this same way. If a speaker comes into contact with a word that is not frequent, then he or she may use other frequent words that are familiar in order to provide a model for how the unfamiliar word should be produced.

Usage based phonology can be applied to perception and production of loanwords. Bybee (2000) has observed that frequently used words undergo more change than less commonly used words. Under this theory, loanwords that are more frequent may undergo different phonological phenomena than infrequent ones. An exemplar model establishes a connection between perception and production. In this model, all linguistic material is stored permanently in the form of exemplars after it has been either produced or perceived and speakers use these exemplars to process language (Pierrehumbert 2001). When addressing phonological variation in the production of loanwords, the application of an exemplar model could not only take into account whether the speaker has access to sounds, in this case the phonology of the lending

language, but could consider whether a speaker applies linguistic knowledge that is perceived to production.

While a recent approach to examine language change and frequency has been through the application of probability (Pierrehumbert 2003), this theoretical model does not best serve variability in language contact and specifically loanwords. One fault of probabilistic linguistics is that it incorporates the use of multiple regressions as a means to parse out internal linguistic effects of language (Bod, Jannedy, Kennedy 2003). In analyzing language contact and loanword adaptations, linguistic effects of language may relate to linguistic knowledge and affect different degrees of variability. This hypothesis assumes a relationship between perception and production of a loanword, therefore probabilistic linguistics will not be applied to this research as it considers these as outliers.

This study suggests that variation occurs in loanwords because of the interplay between perception, production and frequency. When considering loanwords of Arabic origin in the Brazilian Portuguese lexicon, non-categorical phonological variation is a possibility to be explored. In this section, theoretical models have been mentioned that address variation. Applications of models that take into account both perception and productions are justified. Factors attributed to variation in the production of loanwords include speaker accommodation, frequency, and probability when investigating variability of language transfer in the production of loanwords.

2.3.3 Language Transfer

Language transfer can be defined as a cross-linguistic effect of language learning (Odlin 1992). Different linguistic areas such as phonology, morphology, syntax and semantics in any combination may cause linguistic change (Sankoff 2001). While a native language may have an effect on the language being acquired, in some cases the converse of this situation may also occur.

Convergence is a type of linguistic transfer that can be defined as the adjustment of speech patterns to match patterns of another group, and typically, this can be seen as the effect of prior language experience on a newly acquired language. One scholar states that convergence is viewed as an emergent property and optimization strategy in bilingual speech (Toribio 2004). Divergence, another type of language transfer, accounts for how the newly acquired language affects the native language, especially in the case of reborrowing (Ito et al. 2006).

Convergence has mainly been defined as a process that affects bilinguals and has mostly been applied to code-switching. However, this study proposes an examination of convergence in monolingual speech, primarily in the way that L1 affects production of the NNL. In this research, divergence is addressed by analyzing the readjustments of Arabic loanword adaptations in Brazilian Portuguese by speakers who have varying degrees of experience in the Arabic language.

In order to address both types of language transfer between these languages wholly, it is necessary to examine the reasons and ways in which these languages have

come into contact and make note of sociological factors that may account for these occurrences, as will be done in the following section.

2.4 Arabic and Portuguese Contact

While sociological factors have contributed to a global diaspora in several Arabic countries (Osman 2006), as far as linguistically documenting Arabic in contact with other languages, most of the work has dealt with language contact between Arabic and English within the United States (Rouchdy 1992) as well as French and Arabic in North Africa (Owens 2000, Heath 1989). However, several other countries have had significant language contact with Arabic, especially in South America, and mostly in Brazil (Maloof 1959).

São Paulo, the largest city in South America, is home to over fifty immigrant populations whose native languages are not Portuguese (Nichols and Snyder 1981). Immigration has had linguistic implications in this city as different languages including Japanese, Italian, German and Arabic have come into contact with Portuguese. Syrian and Lebanese migration is unique to some of these other migrations since it has occurred in different waves (Knowlton 1955), thereby providing a diverse linguistic population that may vary in the way they maintain and acquire language.

There are more Lebanese immigrants and descendents in Brazil, primarily in São Paulo, than in any other country in the world aside from the United States (Truzzi 1997). In addition, there are parts of Lebanon, especially in the Bekaa Valley, where it has been reported that nearly all of the population speaks Portuguese (Khatlab 1999). Of the few

sociological studies that exist, principally it is emigration and sociological patterns that have been explored (Khatlab 2005, Gattaz 2005). Only a handful of studies have been performed concerning language contact (Santos 1980). As several sociological factors can be linked to the continued contact between Brazilians and Lebanese, this is the first study to examine the linguistic effects that sociological factors have on language usage in Lebanese-Brazilian communities.

2.4.1 Motivations for Contact

Brazil has had an economic relationship with Lebanon for several centuries. Claims have been suggested that the first Lebanese contact with Brazil occurred in the sixteenth century when Portuguese expeditions first came to Brazil carrying Arabs (Bastani 1945). Specific evidence of contact is included in census counts that cite Lebanese entering Brazil in the early nineteenth century (Lessner 1999). Both political and religious motivations also prompted migration to Brazil from what is considered present- day Lebanon in the mid 1800s when Lebanon and several surrounding areas were under the control of the Ottoman Empire. Overpopulation and religious divisions during this occupation prompted many Lebanese Christians to migrate to other places, including Brazil (Truzzi 1999).

The abolition of slavery in Brazil in 1888 changed the nature of the work force creating a need for immigrant labor. One catalyst for Lebanese emigration was politically prompted by the invitation of Pedro II, the last emperor of Brazil, who promised economic incentives to this population. Soon after, Lebanese migration would contribute

significantly to the labor force during the rubber boom in the Amazons in northwestern Brazil (Capello 2002). Migration had linguistic implications on both Lebanese Arabic and Brazilian Portuguese. When the rubber boom ended, Lebanese immigrants became known as *mascates* or peddlers, and came to take over the jobs that Portuguese and Italian immigrants had once held. According to Lessner, such jobs would require assimilation to Portuguese language in order to have economic success in these professions. Lessner documents that the first Lebanese immigrants came to work and did not know how to speak Portuguese. Peddlers usually traveled in twos, with the newly emigrated partner learning Portuguese from the other (Lessner 1999). Another account cites that the recent immigrant would use key phrases, usually the words related to what was being sold, and these words would be repeated throughout the day with most of these limited speakers not knowing how to even write the addresses of the home where they had done business because they could not write in Portuguese (Iori 2004).

2.4.2 Linguistic Outcomes of Language Contact

During the twentieth century coffee boom in Brazil, São Paulo, as opposed to other areas in Brazil, became a place increasingly populated by immigrants. Most numerous among these immigrants were Syrians and Lebanese (Prudente 2000). In one article, "450 Years of São Paulo: The Metropolis of the Arabs," (Iori 2004) the author states that of the millions of travelers who crossed the Atlantic in the direction of America in the late nineteenth century, the Arabs are the ones that most marked the face of São Paulo. As learning Portuguese for the recent immigrant proved necessary for

survival, gradual disuse of Arabic became inevitable. The following statement is translated from one historian who refers to the use of the Arabic language in Brazil during this time, "They [the Lebanese] mislearned words and phrases sufficient enough for selling their wares and went out by themselves. They didn't need anything more than a basic understanding of Portuguese and their work was what trained them in the language" (Truzzi 1999).

While hard work conditions and difficulty with the language were a reality for first-generation Lebanese immigrants in the early twentieth century, second-generation Lebanese Brazilians did not experience the same linguistic fate as their parents. For this group, Portuguese now served as a native language. In this population, education was stressed in the majority of these families, as was the use of Portuguese inside and outside of the home. With increased education and facility with language, many descendants of Lebanese would become important figures, especially in the fields of medicine and politics in Brazilian society (Truzzi 1992). In an effort to maintain Arabic in the second and subsequent generations, Arabic language schools became prevalent in the early twentieth century (Safady 1972). Some schools were connected to sports clubs or churches in the Melkite or Maronite tradition, while others were not (Fahd 1985).

Historical and political happenings in Brazil in the first half of the twentieth century are some of the factors that hindered the efforts of Arabic speakers to maintain their language in Brazil. One factor affecting language maintenance is that under the dictatorship of Getúlio Vargas beginning in 1937, neither names of places associated with another country besides Brazil, nor publications in other languages aside from Portuguese

were allowed (Fahd 1985). Soon Arabic language schools began to close. During the Second World War, xenophobia in Brazil was a factor that prohibited languages associated with forces that opposed Brazil's allied position. As a result, immigration decreased in Brazil, including Lebanese, and the needs of first-generation families began to become less of a national interest (Salawdeh 1997).

Evidence of a decline Arabic language usage can be found through the examination of the reduction of Arabic materials published in Brazil. Of the over one hundred newspapers, magazines and journals containing Arabic published in Brazil that existed in the late- nineteenth through the mid-twentieth century, only a handful of such publications are found at the beginning of the twenty-first century and none are exclusively in Arabic.

In Wahid Safady's book *A imigração árabe no Brasil* (Safady 1972); through the examples of publications that address Arab immigration, one is able to infer that there was a drastic shift in Arabic language use in the last century. According to Safady, *Al-Munazit* (1899-1903) is an example of a newspaper that was written totally in Arabic and was published and distributed in Brazil. There was no translation for its title in Portuguese, and only some commercial names in advertisements appeared in Portuguese and all other text was in Arabic. Another publication, *Al-Karmat,* first published in 1914, was the first magazine for Arabic-speaking women in the Americas. It was suspended in 1941 when publications in languages other than Portuguese were banned until 1947 during the rule of the Vargas dictatorship of 1937-1945. *A Brasil al Mussauarat* was the first magazine to import material for linotype that was used in the Arabic section of

Folha da manhã, a daily Portuguese-language newspaper. The fact that there was an Arabic language supplement in the most widely circulated Brazilian newspaper attests to a bilingual population, one that sustained the need for Arabic-language materials, but also was interested in obtaining information from a daily Portuguese language news source. In 1937, *Bait Al Jaliat*, a monthly sports bulletin from one of the sports clubs in São Paulo published material in Portuguese and Arabic. In 1962, one publication, *Voz dos árabes,* included three pages in Portuguese and one page in Arabic. The last example points toward a trend where more Portuguese would be used than Arabic in texts that address Arab-Brazilians, foreshadowing the rapid decline of Arabic language materials printed in Brazil.

Not all political actions would have a negative impact on Arabic language use in Brazil in the same way it did during the Vargas dictatorship. A later political leader would mimic the actions of the last Brazilian emperor who had encouraged Lebanese to come to Brazil almost a century earlier. President Juscelino Kubitschek, who served from 1956-1961, went to Lebanon shortly after his term ended. Despite his concern that Lebanese people would not understand him when he spoke Portuguese, Kubitschek was overwhelmed by the number of people in that country who understood his language (Sarruf 2005). This example serves as evidence that Portuguese was indeed an element of the Lebanese region because of return migration Lebanese Brazilians as well as familial ties to Brazil. Both examples show how different waves of migration between both countries were prompted by sociological factors and had linguistic consequences.

Evidence that Lebanese Arabic and Brazilian Portuguese not only have come into contact in Brazil but also in Lebanon can be cited from an account occurring in Sultan Yacoub. One report states, without mention of the size of the population, that 99% of the people in this small Lebanese village understand Portuguese, (Sarruf 2005). While no empirical study appears in the article to support this percentage, another source reports people from this village having never gone to Brazil, but having learned Portuguese in order to communicate with their relatives in Brazil (Khatlab 2005). A specialist in Brazilian-Lebanese relations explains the reason for this linguistic phenomenon in this way "Many of the initial immigrants who came to Brazil at the beginning of the twentieth century had intentions of returning to Lebanon after the situation became more politically and financially favorable to doing so, but never had the opportunity in the beginning" (Khatlab 1999).

One of the most recent political motivations for emigration from Lebanon to Brazil was due to war. After the creation of the state of Israel, several wars occurred in the region of the Levante. The Lebanese Civil War which lasted from 1975-1990 (Murphy 2006) prompted mass migration to other countries. Many people displaced during the war sought refuge in Brazil, as they had friends or relatives of Lebanese origin who could help them make a transition (Natali 2008). While oral histories from some of these immigrants have been gathered (Gattaz 2005), neither linguistic consequences of this migration nor linguistic analyses of these interviews have been addressed.

Lebanese migration to Brazil has occurred in different waves for over 150 years with multiple sociological factors affecting how the languages have come together.

Studies addressing the contact between Arabic and Portuguese are lacking. The only study with empirical results involving contact between these languages involves bilingual speech and code-switching (Nabhan 1989). While this study addresses convergence, it fails to relate how sociological factors specifically affect variation in the way that Brazilian Portuguese is spoken. While Nabhan mentions Arabic loanwords in the Portuguese lexicon, she ignores the possibility for phonological variation due to divergence. A study addressing both convergence and divergence in language contact would be original research and an attempt more wholly to understand the effects of phonological variability across these two varieties of language.

2.4.3 Contrastive Analysis of Arabic and Portuguese

2.4.3.1 Segmental and Non-segmental Contrast

The contact of Arabic and Portuguese may result in phonological conflict based on segmental and non-segmental differences in these two languages. In her book *Árabe e Português: Fonologia Contrastiva*, Safa Jubran addresses some of these topics and provides the only phonological contrastive account between Arabic and Portuguese in print to date. This section summarizes her observations and presents some of the main differences between Brazilian Portuguese and Lebanese Arabic phonology. A complete list of International Phonetic Alphabet (IPA) representations for Arabic addressed in this study can be found in Appendix A.

Segmental Contrast

One of the most evident phonological differences between Lebanese Arabic and Brazilian Portuguese is the size and type of each language's sound inventory.

Table 2.1: Contrastive Analysis: Number of Phonemes

Lebanese Arabic	35
Brazilian Portuguese	28

Table 2.2: Contrastive Analysis: Number of Vowels

	Total	Closed	Open	Nasal
Lebanese Arabic	3	0	0	0
Brazilian Portuguese	12	5	2	5

Table 2.3: Contrastive Analysis: Type of Consonants

Phonemes in BP that do not exist in LA	/p/, /v/, /ʎ/, /ɲ/, /g/, /ɾ/
Phonemes in LA that do not exist in BP	/t̪/, /d̪/, /s̪/, /ð̪/ /ḥ/, /l̪/ /q/, /ʕ/,/ʔ/

Non-segmental Contrast

Non-segmental phonological differences across languages may produce variability when these languages come into contact. The prosodic features of stress and accentuation affect how sounds are perceived and ultimately incepted into language. In Brazilian Portuguese, there is a restriction on stress in that tonicity must fall within the last three syllables of the word. In two syllable words in Brazilian Portuguese, the stress naturally falls on the penultimate syllable, unless the word ends in certain consonants, such as *r*. If a word deviates from this rule, a diacritic marker is placed on a vowel to indicate where stress should occur, as in the word *café*, which coincidentally is an Arabic loanword meaning 'coffee'.

Lebanese Arabic differs immensely from Brazilian Portuguese with regards to prosody. In Lebanese Arabic, both consonants and vowels may be essentially doubled in length by a diacritic marker called *shedda*. This process of lengthening sound is known as gemmination and in Brazilian Portuguese does not occur. Lebanese Arabic has a fixed accentuation that is related to vowel length. Syllable stress varies depending on whether the word consists of short vowels, long vowels or both. Unlike Brazilian Portuguese, there are no diacritic markers marking stress in Arabic. In words that possess only short syllables, if the word is monosyllabic, then stress will fall on that syllable. In Arabic, in disyllabic words stress always falls on the penultimate and similarly, trisyllabic and quatrasyllabic words stress always falls the antepenultimate syllable. If a word consists of all long vowels, then it is the last syllable that receives the stress. In a word that has both

long and short vowels; the long syllable gets the stress, regardless of its location. If there are two long syllables, the one closest to the end receives the stress.

With regards to a contrastive analysis of non-segmental features between languages, Jubran summarizes that in Arabic the accentuation is fixed and predictable and depends on interaction between a long and a short vowel, making the place where the stress occurs non-discriminatory. On the contrary, she states that Portuguese is a language that uses free accentuation and stress is not predictable; location is regulated by etymology, and the place where stress can occur in a word can vary (Jubran 2004).

2.4.2 Coarticulation

A syllable is minimally comprised of a nucleus, which is at least a vowel, and may have preceding phonemic material called an onset. The phoneme following the onset is referred to as a coda. While consonants and vowels share some of the same features, the way in which these sounds combine may produce variability in language and trigger change. It has been suggested that human articulators do not produce phonemes separately, but start to produce new phonemes when they have not yet completely finished producing previous ones (De Boer 2001). This phenomenon is known as coarticulation. In Lindblom's initial study of the Swedish language, he found a codependent relationship between vowels and consonants, with evidence is available that both preceding and following consonants can affect vowel duration (Lindblom 1963).

Coarticulation is a linguistic factor that contributes to variability in language. It has been suggested that certain sounds are more likely to occur with others, and that these sounds may have restrictions when appearing outside of these common pairings. Similarly, it is suggested that certain sounds are not likely to occur together because of similar sonority and that less sonorant sounds are more susceptible to change. For example, a sonorant element such as a vowel is more likely to occur with a non-sonorant element, such as a voiceless fricative and the sonorant element may over time overpower and reduction may occur. An overlapping of articulatory gestures has also been related to perception in which assimilation is related to misperception (Ohala 1981). Coarticulation links both segmental and non-segmental phonology together as proposed in the following statement as its effects may go beyond the realm of segmental material, with reductions in segmental material affecting stress, particularly if an entire syllable is affected as a result of coarticulation.

The phenomenon of coarticulation can be examined when languages come into contact and in the production of loanwords. It has been posited that historical changes in language, especially those that deal with assimilation, become lexically diffused instead of phonologically conditioned because of frequency (Bybee 2002). By revisiting historical observations through synchronic analysis, linguists may better understand how languages come into contact and consequently change by examining sociological information during the time of study instead of after the fact (Mattos e Silva 2004). This latter point is crucial in justifying why loanwords that have been incepted diachronically would be pertinent to be used in a synchronic study involving coarticulation.

In the contact between Lebanese Arabic and Brazilian Portuguese, there are certain phenomena related to coarticulation occurring in Brazilian Portuguese that do not occur in Lebanese Arabic. While exploring production of Brazilian Portuguese including loanwords of Arabic origin by speakers of the Lebanese community of São Paulo, this study further addresses variability in phonological aspects of language maintenance by focusing on certain types of assimilation.

Specifically, this study examines variable forms of assimilation that have been noted in native speakers of Brazilian Portuguese to discover whether these forms also are variable in a non-native speaking population. Velarization of /r/, palatalization of /t/ and /d/ and vocalization of /l/ occur in certain phonological environments in Brazilian Portuguese but do not occur in Lebanese Arabic. The hypothesis is that loanwords of Arabic origin containing these phonemes undergo different rates of assimilation in comparison to other types of words. Variation may be attributed to both lexical and phonological influences. In the next section, a brief overview of three types of assimilation is provided.

Palatalization occurs when a consonant assimilates to a high front vowel. This phenomenon has been observed historically throughout the Romance languages (Trask 1996). With regards to palatalization, the sounds /t/ and /d/ have been of interest to linguists across several languages including Japanese (Crawford 2007) and Montrealian French (Drapeau 1981). In Korean, this type of assimilation has been observed as occurring across the morpheme boundaries (Cho 2001). In Brazilian Portuguese,

palatalization of dental stops has been occurring in the language for the past several decades (Teyssier 1982). This is not in all cases of Brazilian Portuguese speakers, but in certain regions and populations, relating gradualness of change to sociological variables and experience (Carvalho 2004). In Brazilian Portuguese, palatalization is noted in occurring in voiced and voiceless alveolar stops, /t/ and /d/, where these phonemes precede high, front closed vowels such as /i/ (Bisol and da Hora 1993). In addition to voiced and voiceless alveolar stops, there are pharyngealized counterparts of these sounds /t̪/ and /d̪/, in Lebanese Arabic. Palatalization has been cited occasionally to occur only in the non-emphatic varieties of /t/ and /d/ (Watson 2002), but not at all as widespread as in Brazilian Portuguese.

Both /r/ and /l/ belong to the class of phonemes called liquids (Ladefoged 1996). Liquids, i.e., /r/ and /l/, undergo change in certain phonological environments. Different regional dialects exhibit variation in velarization when both preceding and following a vowel, resulting in the following allophones: /ɦ/ /h/ /x/ /ɾ/ / ɤ/ / ř //ɹ/ (Cristófaro Silva 2001). The word for *rata* 'a female rat' /'ra.tə/ for example, could be pronounced one of seven ways: /'ɦa.tə/, /'ha.tə/, /'xa.tə/, /'ɾa.tə/, /'ɤa.tə/ /'řa.tə/ and /'ɹa.tə/ because of variation. An example in which velarization of /r/ could occur in both syllable initial and word final position occurs in the word 'radar' /xa.'dax /.

In Lebanese Arabic however, there are no allophones of /r/ (Abdul Karim 1980). Velarization is not a documented form of assimilation occurring in this language and as a result, could be acquired variably by a native speaker of Arabic learning Portuguese.

With regards to assimilation associated with /l/, Brazilian Portuguese and Lebanese Arabic undergo different types of assimilation which may affect in variability when these languages come into contact. In Brazilian Portuguese, assimilation, in the form of vocalization, has been documented in syllable final position when a lateral consonant is replaced by a vowel or a semivowel. While occurring in other languages such as Bernese German (Selmer 1933) and English (Johnson and Britain 2002), vocalization has not been documented in Lebanese Arabic. Loanwords that have been incepted from Arabic into Portuguese provide a venue to examine variability in the production of vocalization by speakers who have both Arabic and Portuguese language experience and potentially different associations with assimilation of this phoneme.

In Lebanese Arabic, one factor affecting assimilation in this language is that diglossia can occur between Modern Standard Arabic (MSA) and the dialectal variety used in Lebanon (LA) (Haddad 1984). In Modern Standard Arabic there is a distinction between, /ɬ/ and /l/, of which native speakers of Lebanese Arabic may not be aware and therefore may produce these phonemes interchangeably (Abboud 1979). This is illustrated in the following example with variation occurring in the Arabic word 'God.' Two documented pronunciations include /al.'lah/ and /aɬ.'ɬah/.

In the case of /l/ in Lebanese Arabic, assimilation is primarily related to allomorphy when doubling and lengthening of sounds occur. While definiteness can be expressed in several ways in Arabic, one way is in the form of a bound morpheme preceding the noun. In Lebanese Arabic, the way the definite article is written in Arabic does not differ orthographically for gender and number, as is the case in Brazilian Portuguese. However, in spoken Arabic, differentiation exists in pronunciation of the definite article depending on the sound that immediately follows it.

In order to understand this phenomenon better and how it relates to perception and production of the phoneme /l/, it is imperative to acknowledge that Classical Arabic recognized two phonological groups, which could be separated into coronal or non-coronal sounds. Coronal sounds are those that are concerned with where the tongue has contact with the rest of the mouth, and include dental, alveolar and post alveolar consonants. In Arabic, these coronal sounds are referred to as "solar" letters while non-coronal sounds are referred to as "lunar" letters, as is illustrated in Tables 2.4 and 2.5.

The classification of these sounds is important in distinguishing the way the definite article preceding a noun should be pronounced with regards to assimilation. Definite articles preceding lunar letters retain the pronunciation of /l/, whereas definite articles preceding solar letters, do not pronounce the /l/ and assimilate to the following letter.

Table 2.4: "Solar" letters- Coronal Consonants

Arabic symbol	ن	ل	ظ	ط	ض	ص	ش	س	ز	ر	د	ذ	ث	ت
phoneme	/n/	/l/	/ð̩/	/t̩/	/d̩/	/s̩/	/ʃ/	/s/	/z/	/r/	/d/	/ð/	/θ/	/t/

Table 2.5: "Lunar" letters- Non-Coronal Consonants

Arabic symbol	ي	و	ه	م	ك	ق	ف	غ	ع	خ	ح	ج	ب
Phoneme	/j/	/w/	/h/	/m/	/k/	/q/	/f/	/ɣ/	/ʕ/	/x/	/h̩/	/ʒ/	/b/

Many loanwords borrowed from Arabic into Portuguese contain the morphological material described because in written Arabic the definite article is not separated from the noun it modifies. In Arabic loanwords that have entered Portuguese, added variability in production of these words may be due to vocalization of /l/ that occurs in Brazilian Portuguese by a speaker that has experience with both the lending and borrowing languages. By examining whether a difference exists in the usage of vocalization in loanwords of Arabic origin vs. non-loanwords in Portuguese, the

relationship between allomorphy and production of assimilation in another language can be explored.

In summary, palatalization, velarization and vocalization occur in Brazilian Portuguese of São Paulo but do not occur in Lebanese Arabic, a language that has been in contact with this variety of Brazilian Portuguese for almost two centuries. While Arabic language maintenance has been the primary topic of research given this contact situation, language transfer and variability of assimilation specific to Brazilian Portuguese has not been explored within members of this population. A better understanding of the elements that affect phonological variation in language contact may be established by examining loanwords of Arabic origin and further contribute to the literature of language change, variation and loanword adaptations.

3. Methodology

It this chapter, the methods that will be used to explore variation in the language contact of Lebanese Arabic with Brazilian Portuguese of São Paulo, Brazil are outlined. First, a representative sample of the target population is sought to justify diversity is sought. A preliminary survey indicates that there are both sociological and linguistic diversity exists in the Lebanese-Brazilian population. The hypotheses that form the basis of the experiment are stated and the dependent variables are defined. A control group is tested to define the standard and a pilot study addresses the research questions and tests the experimental design. In closing, the procedure used for collecting data in the final, larger experiment is outlined and amplified.

3.1 SAMPLE

The sample takes into account diversity within the target population. In order to be eligible to participate in the experiment, a subject had to meet the following criteria:

-reside in São Paulo, Brazil

-be 18 years of age or older

-be a first, second or third-generation Lebanese Brazilian

-be able to read Brazilian Portuguese

-have a consent form on file with the researcher

3.2 PRELIMINARY SURVEY

To ensure a representative sample existed before conducting fieldwork in São Paulo, Brazil, an electronic survey was administered via a secure URL link to determine participant eligibility. Twenty-five Lebanese Brazilians were polled and asked to provide ethnographic information related to age, sex, and educational background, place of origin and language usage and preference. Using a Likert scale, subjects were asked to respond to questions related to Arabic language usage contact in São Paulo. In addition, subjects were asked to perform a perception task, in which they identified words they believed to be of Arabic origin. The questionnaire in its entirety can be found in Appendix B.

The answers to the questionnaire revealed that maintenance of Arabic and Arabic language usage was strongest in the population that was born in Lebanon as opposed to second and third- generation Lebanese Brazilians. Of the participants surveyed, 70% of subjects reported that they used both Arabic and Portuguese, indicating that these languages are indeed in contact in this community.

Next, subjects were instructed to identify the words that they perceived to be of Arabic origin from part of a text consisting of borrowed words (Chediak 1976). This task served two purposes: first, to discover whether language ability in Arabic influenced recognition of words from Arabic origin in Portuguese, and second, to discover whether certain words were more likely to be perceived as being from Arabic origin than others.

Preliminary findings reveal that perception of loanwords of Arabic origin varied among all subjects. These data confirm that a linguistically diverse Lebanese-Brazilian

population exists in São Paulo and people in this community perform a linguistic perception task at different rates. These observations justify further inquiry into the nature of linguistic variation within this community.

3.3 EXPERIMENTAL DESIGN

3.3.1 Tests

In this section, the different parts of the experiment are outlined. The first part addresses the research question:

Is there variation in the usage of Arabic within the Lebanese-Brazilian community in São Paulo?

The following sociological factors are considered in the questionnaire in order to address this question:

Sociological Background

Age
Schooling
Sex
Degree of Separation from Lebanon: First-Generation Lebanese Brazilian Second- Generation Lebanese Brazilian Third-Generation Lebanese Brazilian

For the purposes of this study, a first-generation Lebanese Brazilian is defined as a person who was born in Lebanon. A second-generation Lebanese Brazilian has at least a smother who was born in Lebanon and a third-generation Lebanese Brazilian is defined as having at least grandmother or grandfather of Lebanese origin.

In addition to providing a spontaneous speech sample in Arabic that provides evidence of language maintenance, participants self-report what they believe their maintenance of the language to be in the following areas. Subjects were given the choice of always, sometimes or never when reporting their answers. In this way, the degree of usage was considered. This part of the questionnaire and the different experiences with Arabic inquired are as follows:

Language Use

a. Situational Use of Arabic

School
Home
Work
Religious services
Telephone
Friends
E-mail

b. Language Competency in Arabic

Speak
Understand
Read
Write

c. Experience with other languages

French
English
Other

d. Language Preference

Arabic
Portuguese
Both

The second part of the experiment addresses the research question:

In first-generation Lebanese Brazilians, is there evidence for phonological variability in the production of Brazilian Portuguese, and does this extend to words of Arabic origin?

Spontaneous and scripted samples test the effect of Arabic language transfer on variability in spoken Brazilian Portuguese.

Scripted Speech-Portuguese Text

Variability is tested by examining specific phonemes that are susceptible to certain types of assimilation in Brazilian Portuguese. The text is designed to test target phonemes, mentioned below, that are of interest in different phonological environments. In at least five instances, the same word appears more than once more to test for variation in the individual in the same lexical item.

Phoneme	Type of assimilation
/l/	vocalization
/d/	palatalization
/t/	palatalization
/r/	velarization

Both spontaneous and scripted speech of native Arabic speakers is used to test variation in the production Brazilian Portuguese. In scripted speech, variation in the production of assimilation in loanwords of Arabic origin and non-loanwords is investigated. These results are compared to phonological variation in the spontaneous speech samples.

In a population that has exposure to Arabic and Portuguese, words of Arabic origin are studied in order to discover whether variation occurs in the production of

Brazilian Portuguese. Variable factors considered in the selection of loanwords include frequency, non-lexical material from Arabic, and specific phonemes. Loanwords are taken from a corpus that was compiled at the Center of Arabic Studies at Federal University of Rio de Janeiro (UFMJ). In this corpus, each word was referenced with the dictionary from which the Arabic origin was confirmed. When choosing words for the study, both CETEM and LAEL Brazilian Portuguese corpora rankings are considered to indicate how frequent the word occurs in Portuguese. Conditions under which the three types of assimilation, palatalization, vocalization and velarization could occur are also considered when choosing these words. In addition, words that include morphological material from Arabic, such as the presence of the prefixes a- and al are also included. In Table 2.6, the Arabic loanwords are listed. In addition, information about frequency rankings in Portuguese, type of Brazilian Portuguese assimilation possible is indicated. Of the Arabic loanwords included in the text, 20% of the words chosen retain the morpheme al-, 20% retain the morpheme a- and the remaining 60% are words that began neither with a- nor al-. Chediak's model of incorporating words of Arabic origin in a text is adapted and applied to the present study to research both perception and production. The standardized text that includes Arabic loanwords can be found in Appendix C.

Table 2.6: Arabic Loanwords Appearing in Text

Portuguese	Gloss	Arabic Transliteration	BP Assimilation	CETEM	LAEL Escrita
acelga	chard	as-silqa	vocalization	3	25
açougue	butcher shop	as-súq		17	86
adobe	adobe	at-túb		67	83
alambique	distiller	al-'anbíq		18	10
alcaparra	capers	al-kabbár	vocalization velarization	0	1
alcorão	quran	al-qur'án	vocalization	2	25
alcunha	last name	al-kunya	vocalization	759	32
aldeia	town	ad-day'a	vocalization	8768	339
alecrim	rosemary	al-iklíl		84	34
alfândega	customs	al-funduq	vocalization	414	261
alfinete	safety pin	*al-filed al-hilâl	vocalization palatalization	91	32
alfombra	red rug	al-humrâ	vocalization	1	1
álgebra	algebra	al-jabr	vocalization	22	21
algodão	cotton	al-qutn	vocalization	770	668
almôndega	meatball	al-bundqâ	vocalization	1	17
anil	blue	an-níl	vocalization	8	22
arraial	fair	controversial	vocalization velarization	465	234
arroba	measurement	ar-rubb	velarization	11	236
atum	tuna	at-tunn		429	52
aval	duty	hawála	vocalization	1848	480
azar	misfortune	'dar		1993	291
azeite	oil	az-zayt	palatalization	1815	125
azeitona	olive	az-zaytúna		238	47
azougue	mercury	az-zá'wq		0	8
balde	recipient	controversial	vocalization palatalization	513	76

Portuguese	Gloss	Arabic Transliteration	BP Assimilation	CETEM	LAEL Escrita
caravana	caravan	qairauán		1800	355
cuscuz	semolina	kuskus		4	38
elixir	potion	aliksír		91	20
emir	emir	amír		216	65
enxaqueca	migraine	ax-xaqíqa		98	33
enxoval	dry goods	enxovia	vocalization	54	42
fatia	slice	fitátâ	palatalization	2582	405
fulano	a nobody	fulán		212	78
garrafa	glass	garába	velarization	1709	453
girafa	giraffe	zaráfa		68	28
giz	chalk	gibs		100	66
guitarra	guitar	kíthâra	velarization	4253	544
haji	pilgrim	hájj		1	0
haquim	doctor	hakím		0	0
haxixe	hash	haxíxi		2001	52
hena	henna	hinná		4	0
jasmim	jasmine	yásmín		18	24
leilão	auction	al-á'lám		4441	2030
mameluco	servant	mamlúk		5	0
marfim	marble	hazm		424	136
mascate	peddlar	maskat	palatalization	19	18

Table 2.6: Arabic Loanwords Appearing in Text (continued)

Portuguese	Gloss	Arabic Transliteration	BP Assimilation	CETEM	LAEL Escrita
masmorra	prison	matmúra	velarization	19	18
mesquita	mosque	masdjid			
mufti	mufti	muft	palatalization	34	0
nuca	nape of neck	controversial origin		325	134
quibe	kibbeh	quibba		0	17
quintal	yard	controversial origin	vocalization	707	308
ramadão	ramadan	ramadán	velarization	0	10
roque	rook	rukhkh	velarization	54	270
sura	quranic verse	súra		4	2
talco	talcum	talq	vocalization	23	32
tambor	drum	tanbúr		254	131
tarefa	task	taríha		10363	1412
tarifa	tax	tahrífa		863	1062
xadrez	chess	xatrandj		1585	391
xaquemate	check mate	xáykh máta	palatalization	0	159
xarope	syrup	xaráb		69	31

In the first generation, is the perception of the origin of Arabic loanwords variable and does perception affect phonological variability in production?

In order to address this question, subjects are asked to identify words in the text that they believe are of Arabic origin. Trends and inconsistencies in the number and type of words perceived are reported. In relating perception to production, the next step investigates whether words of Arabic origin are variably produced when perceived as being of Arabic origin in comparison to words that are not of Arabic origin.

3.3.2 Control Group

A control group was established in order to make some observations about a cross-section of the population with regards to production of Brazilian Portuguese of São Paulo. The control group consists of ten people born in São Paulo that neither have an affiliation with Lebanon nor any knowledge of the Arabic language. They vary in age, sex and educational background. Observations of their performance of the production and perception tasks are as follows:

When providing a spontaneous speech sample in Portuguese, subjects were able to do so effortlessly. With regards to phonological variation in this discourse, of the ten subjects surveyed, nine consistently palatalized, velarized and vocalized and one subject did not palatalize in any part of the spontaneous speech. The subject that did not palatalize was over the age of 65 and was the only one of the subjects that was interviewed who was the child of an immigrant, in this case, of Italian descent.

When reading the text containing Arabic loanwords, all subjects were consistent in their production of phonemes within the text and when compared to their spontaneous speech samples.

There was variability in the perception task. Identification of loanwords ranged from 0-40%, with a mean of 17% correctly identified. There was no difference between the pronunciations of Arabic loanwords vs. non-Arabic loanwords, except when analyzing Arabic loanwords that began with <h>. Evidence for variability in the perception and production of these Arabic loanwords is illustrated by the percentages below, which represent sums for the control group.

Loanword	Identified Loanword	Pronounced /x/
hena	50%	30%
haquim	70%	60%
haji	90%	60%
haxixe	50%	40%

Words that were identified by each member of the control group as Arabic loanwords can be found at the end the Appendix G. A summary of the data gathered from the control group is as follows:

A majority of the cross section of people born in São Paulo show evidence for incorporating palatalization, velarization in both spontaneous and scripted speech. The

incorporation of these phonological adjustments is justified as the norm for speakers in São Paulo, Brazil. São Paulo natives also vary in performance of a perception task when surveyed to identify Arabic loanwords in context. In addition, production of loanwords varies in this sample. Words of Arabic origin that begin with <h> are shown to be variable both in perception and the production of the word initial phoneme /x/. There is no difference in the production of palatalization, velarization or vocalization between loanwords and non-loanwords.

3.4 PILOT STUDY

A pilot study was administered to test the experimental design. A woman and man from each generational group participated in the pilot study, for a total of six subjects. The objective in doing the pilot study is to discover whether the research questions can be addressed using the experimental design proposed both quantatively and qualitatively.

3.4.1 Research Question #1

Is there variation in the usage of Arabic within the Lebanese-Brazilian community in São Paulo?

Of the subjects surveyed, Arabic was reported to be mostly maintained in the home more than in any other venue. No subjects reported using Arabic in electronic mail. It was reported that Arabic was not used in conjunction with Portuguese on the telephone. Usage of Arabic corresponded to face-to-face interaction in the majority of cases. Usage of Arabic in religion occurred in all generational groups. In regards to the

use of other languages, all subjects reported using Portuguese; in addition to other languages, primarily English and French. Those who reported to have the most knowledge of French were subjects who emigrated directly from Lebanon. Subjects that were under 36 years of age regardless of their place of origin, reported to have greater abilities with English than subjects over the age of 55.

In summary, situational use of Arabic language usage varied. Subjects reported to have different abilities with Portuguese and the Arabic language as well as knowledge of other languages. The ability to produce spontaneous Arabic discourse also varied in this pilot study.

Spontaneous Speech Sample- Arabic

To elicit spontaneous speech, subjects were asked to relay an experience from childhood in Arabic. Of the subjects surveyed, those whose first language was Arabic effortlessly completed this task. In the second-generation Lebanese Brazilians, one member of this group was able to complete this task while the other was not. Of the two third-generation Lebanese Brazilians tested, neither of these subjects was able to produce spontaneous speech in Arabic and one subject recited a proverb that she recalled that her grandmother used to recite. A sample of Arabic spontaneous speech is provided from a first, second and third-generation subject to show the variability that existed in the production of Arabic.

First Generation- SP 2

English Translation:

I won a toy gift and I was small maybe I was approximately six years old. I went upstairs to the chickens and I showed them the toy- to the chickens- I showed the toy- but I held the stick and I'm still showing them the toy because I became old- but that day I fell and hurt my hand but the toy stayed with the chickens.

IPA transcription:

rbiḥit hdiye liʕbe wkint zɣiːre yimkin keːnʕumriːʃiː sititisniːn ṭiʔriːban ṭliʕt laʕind eddʒeːʒeːt farʒajtun ʕalejha liddʒeːʒeːt farʒajtun ʕalliʕbe bass hmilt ʕaṣaːje wʕam ferʒiːhun ʕalliʕbe l iʔinn ʔnaː ṣirt kbiːre wbas jawmta ʔanaː wʔiʕt wrawwaḥit ʔiː diː bas ḍallit lliʕbe maʕ iddʒeːʒeːt

Arabic Script:

ربحت هدية لعبة وكنت صغيرة يمكن كان عمري شي ست سنين تقريبا
طلعت لعند الدجاجات فرجيتن عليها للدجاجات . فرجيتن عالعبة بس حملت العصايا وعم فرجيهن عاللعبة لانه أنا صرت كبيرة وبس يومتها أنا وقعت وروحت ايدي بس ضلت اللعبة مع الدجاجات.

Linguistic Observations: Not only is the subject is able to provide a spontaneous speech sample, but also the speaker is fluent in Arabic. There is no phonological or grammatical evidence for the influence of Brazilian Portuguese in this discourse.

Second Generation-SP 1

English translation:

I went to Italy not long ago. I stayed there for some fifteen days. I liked it a lot. I my parents were not in Italy at all. But Italy was very beautiful and I liked it a lot.

IPA transcription:

rahit ʿala ʿala itaːlja miʃ min zameːn yeʿanɪ ḍalejt ʃɪː χamistaʿʃar jaweːm w-ʿaʒabni ktir ʔana (ʔeː) ʔana ʔahaliː maː bikuːnu biʔitalia bes ktiːr ḥeluː ʿaʒebniː ktiːr.

Arabic Script:

رحت على (على) اطاليا مش من زمان يعني ضليت شي خمسة عشر يوم وعجبني كثير أنا. أنا أهلى ما بيكونوا باطاليا بس كثير حلو عجبنى كثير.

Linguistic Observations: This subject is able to provide a spontaneous speech sample using very simple sentences which have problems with grammatical agreement. For example, 'Italia' is a feminine word in Arabic and the subject uses a masculine adjective

حلو . ‘beautiful’ to modify it. There is also evidence for phonological interference from Brazilian Portuguese in the pronunciation of the word بيكونوا.

Third Generation-SP 17

English Translation:

Sleep early. Wake up early and see what happens to the health.

IPA Transcription:

ne:m bakki:r uʔu:m bakki:r ʃuf eshhaaʕ ki:f bis:r

Arabic Script:

نام بكير قوم بكير شوف الصحة كيف بصير

Linguistic observations: The subject is not able to generate spontaneous speech. The speech that is provided is a proverb that is recited from memory that the subject reports that her grandmother used to say. There is evidence for both phonological and grammatical interference in the discourse of this speaker. In the word الصحة /eshhaaʕ/ 'health', the subject does not pronounce the /ḥ/ , which is a pharyngeal sound considered to difficult articulate for a person without Arabic language experience. In addition, the subject is not able to pronounce the pharyngeal /ʂ/. In the word بتصير /bitʂ:r/ 'to happen', which in the feminine form, the subject says بسير /bis:r/, the masculine form. A possible reason for this is error is that in Portuguese,

the native language of this subject, verbs do not have gender and the subject does not have knowledge of this.

These data indicate that the generational group that was most successful in maintaining and producing the Arabic language was that in which the members emigrated directly from Lebanon to Brazil. Consequently, it is in these subjects that the most influence of Arabic phonology in spoken Brazilian Portuguese is found.

3.4.2 Research Question #2

In first-generation Lebanese Brazilians, is there evidence for phonological variability in the production of Brazilian Portuguese, and does this extend to words of Arabic origin?

Spontaneous Speech

To elicit spontaneous speech in Portuguese, subjects were also asked to relay an experience from childhood in Portuguese. This sample was used as a way to discover whether Arabic transfer affected production of Brazilian Portuguese. In the second and third-generation subjects tested, there is no evidence for variation; however, the first-generation subject was variable in her production of different types of assimilation, even in the same word, as phonetic transcriptions below indicate.

First Generation-SP2

English Translation:

Oh, something funny...I was a very mischievous little girl. I made a lot of messes and didn't let anyone know that it was me and no one lets me be nervous if I didn't open my mother's cupboard and broke everything, then I could do all of the art I wanted not to get in trouble. I ran to the closet to get the dish to break it. I had already broken various plates of my mother's. Oh and there is another funny thing that I remember very well from when I was a child. My sister, she liked to clean the house and didn't allow us to enter so it wouldn't get dirty, so we wouldn't leave marks on the shiny floor. There my

brother was always showing me how to do art and my sister ran to hit us and we opened the drawer of the table in the living room and when my sister was running, she fell and got hurt by the drawer and we escaped from getting caught.

Portuguese Transcription:

Aaa uma coisa engraçada eu fui uma menina muito arteira, fazia bastante bagunça e não deixava ninguém perceber que fui eu, e ninguém pode me deixar ficar nervosa senão abria o armário da minha mãe e a vitrine de louça e quebrava tudo, então podia fazer toda a arte que quando para não apanhar, corria no armário para pegar a louça para quebrar e já quebrei varias louças da minha mãe e tem outra coisa engraçada que eu lembro muito bem quando era criança, minha irmã, ela gostava de limpar a casa e não deixava a gente entrar para não sujar, para não marcar os nossos pés no piso que brilhava o piso lá e sempre meu irmão me ensinava a fazer arte e minha irmã corria para bater na gente e a gente abria a gaveta da mesa da sala de jantar e nisso enquanto minha irmã tava correndo, ela caía, machucava com aquela gaveta e a gente escapava de apanhar...

IPA Transcription:

['a. u.mə'koi.zə.ẽn.gɾa.'sa.də.'eʊ.'fuɪ 'u.mə.me.'ni.nə 'mu.tʊ aɾ.'teɪ.ɾə.fa.'zi.ə.ba.'stã.tɪ ba.'gũ.sə ɪ nʊ.de.'ʃa.və.nĩ.gẽɪ peɾ.se.'beh.kɪ.'fuɪ.'eʊ.ɪ nĩ.'gẽɪ 'pɔ.dɪ.mɪ.de.'ʃah.fi.'ka.neh.vɔ.zə si.no a.'bɾiə.ʊ aɾ.'ma.ɾiʊ da.'mĩ.ɲə. mãɪ.ɪ.a.vi.'tri.nɪ.dɪ lo.'sə.ɪ ke.'bɾa.və.'tu.dʊ. ĩt.'ãʊ. po.diə fa.ze.to.də.aɾ.tɪ.kɪ 'kwã.dʊ 'pa.ɾə 'nãʊ a. pa.'ɲa ko.'ɾiə.nʊ.aɾ.'ma.ɾiʊ.'pɾa. pe.'ga a'lo.sə 'pɾa ke.'bɾah.ɪ.ʒa ke. 'bɾeɪ va.'ɾiəz 'lo.sas.da. 'mi.ɲə.'mãe.ɪ.'tẽɪ.'ou.tɾə 'koi.zə ĩ.'gɾa.'sa.də.kɪ 'eʊ 'lẽ.bɾʊ.'mui.tʊ. 'beɪ 'kwã.dʊ e.ɾə' kɾiã.sə, 'mi.ə iɾ.'mã 'ɛ.lə gos.'ta.və.dʒɪ lĩ.'pah.a 'ka.zə ɪ ''nãʊ.dei.'ʃa.və.a.'ʒẽ.tɪ ẽ.'tɾa 'pɾa 'nũ su.'ʒah 'pɾa 'nũ.mah.'ka ʊs 'nɔ.sʊs 'pɛs 'nʊ 'pi.zʊ.kɪ.bɾi.'ʎa.və ʊ 'pi.zʊ. 'la.ɪ.'sẽ.pɾɪ.'meʊ iɾ.'mãʊ 'mɪ ĩ.si.'na.və a.fa.'zeh 'aɾ.tɪ ɪ 'mĩ.nə iɾ.'mã ko.'hiə.'pɾa.ba.'teh.a'ʒẽ.tɪ.i.a.'bɾiə.a ga.'ve.tə da 'me.zə 'da 'sa.lə.dɪ.ʒã.'tah.ɪ 'ni.sʊ ĩ. 'kwã.tʊ'mĩ.ɲə.iɾ.'mã ta.və.ko.'he.dʊ ɛ.lə ka.'iə ma.ʃu.'ka.

və.kõ.a.ˈkɛ.lə ga.ˈve.tə ɪ a.ˈʒẽ.tɪ i.ska.ˈpa.və ˈdʒɪ a.pa.ˈɲa]

Variability in Assimilation of SP2

IPA	Portuguese	Gloss	IPA	Portuguese	Gloss
ˈpɔ.dɪ	pode	I could	ko.ˈxi.ə	corria	I ran
po.ˈdi.ə	podia	I could	ko.ˈɾi.ə	corria	She ran
ˈdʒɪ	de	of	ko.ˈxẽ.dʊ	correndo	was running
ˈdɪ	de	of			

Second Generation-SP1

English translation:

I was in Italy for a little bit. I traveled for almost fifteen days. It was marvelous. It was a country that I had never visited before. It was beautiful. I visited Rome and went up to several cities- Rome and then Venice.

Portuguese transcription:

Estive a pouco tempo na Italia –Viajei durante quase quinze dias- Foi maravilhoso. Era um pais que não havia visitado. Achei maravilhoso. Gostaria de retornar. Foi muito lindo visitei desde Roma para acima ate Milão passando para varias cidades. Roma e Veneza

[es.tʃi'.vɪ a ˈpou.kʊ ˈtem.pʊ ˈna. i.ˈta.liə vi.a.ˈjei ˈkwa. sɪ ˈkin.zɪ ˈdʒi.əs. foɪ ma.ɾa.vi.ˈʎo.zʊ. ˈnãʊ ko. ɲe.siə. den.tɾʊ.dʊs pa.i.zɪs da.eu.ˈɾo.pə.ˈe.ɾə um pa.ˈis kɪ. naʊ a.viə vi.zi.ta.dʊ ɪ. a.ˈʃeɪ ma.ɾa.vi.ˈlo.zʊ. gos.ta.ˈɾiə dʒɪ xe.tor.ˈnaɾ.ˈfoi ˈmui.tʊ ˈlin.dʊ vi.zi.ˈtei ˈdez.dʃɪ ˈxo.ma ˈpa.ɾə a.ˈsi.mə a.ˈtɛ mi.ˈlaʊ pa.ˈsan.dʊ ˈva.ɾiəs si.ˈda. dʒɪs.ˈxo.mə.e ve.ˈnet.zə]

Third Generation-SP17

English Translation:

I think that one of the things that made me the most excited was the birth of my children. I think for a woman, it is a real dream and today- they are three adults. My daughter is 27, another daughter is 25 and my son is 21. My daughter is married – she's going to have a baby and I am very happy with this news- at the end of the year- I am going to be a grandmother.

Portuguese transcription:

Acho que uma das coisas que mais me emocionou foi o nascimento dos meus filhos. Que eu acho para uma mulher e uma realização plena e hoje eles são três adultos. Uma filha de vinte e sete, outra filha de vinte e cinco e um filho com vinte e um. A minha filha esta casada- vai ter bebe e eu estou muita feliz com esta expectativa e no fim do ano eu vou ser avó.

[a.ˈʃeɪ ˈkɪ ˈu.mə ˈdaz ˈkoɪ.zəz ˈkɪ ˈmaɪs ˈmɪ e.mo.sio. ˈnoʊ ˈfoɪ ˈʊ. na.si.ˈmẽn.tʊ ˈdos ˈmeus ˈfi.ʎʊs. ˈkɪ ˈeʊ ˈa.ʃʊ ˈpa.ɾə ˈũ.mə mu.ˈʎer ˈɛ ˈũ.mə xe.a.li.za.ˈsãʊ ˈple.nə ˈe ˈo.ʒɪ ˈɛ.lɪs ˈsãʊ ˈtɾes a.ˈdul.tʊs.ˈũ.mə ˈfi.ʎəˈdʒɪ ˈvĩ.tʃɪ e. ˈse.tʃɪ ˈou.tɾə ˈfi.ʎə ˈdzɪ ˈvĩ.tʃɪ ɪ ˈsĩ.kʊ e um ˈfi.ʎʊ ˈkõˈvĩ.tʃɪ e um.ə ˈmi.ɲə ˈfi.ʎə es.ˈta ca.ˈza.də ˈvai ˈteɾ be.ˈbe e eʊ ˈes.toʊ ˈmui.tʊ fe.ˈliz ˈkõ ˈes.tə es.pe.ta. ˈtʃi.və. eˈnʊ ˈfĩ ˈdʊ ˈã.nʊ ˈeʊ ˈvoʊ ˈseɾ ˈa.vɔ]

All three subjects were able to give a spontaneous speech sample in Portuguese. The first-generation subject was inconsistent concerning assimilation, even when producing the same word. This did not occur in second and third-generation subjects as shown in the IPA transcriptions.

3.4.3 Research Question #3

In the first generation, is the origin of Arabic loanwords variable and does perception affect phonological variability in production?

This research question is addressed by examining how first, second and third-generation speakers produce a standardized text that includes Arabic loanwords. A phonetic transcription of each subject's reading is provided. These transcriptions serve as data that will assist in determining whether phonological variability of loanwords and non-loanwords and can be found in Appendix F.

In examining the transcriptions of these three texts, phonological inconsistencies are found to occur in this reading. In the first-generation subject, this occurs in loanwords as well as in non-loanwords. In the second-generation subject, words of Arabic origin are produced variably while non-loanwords are not. In the third-generation subject, there is no variability in the production of loanwords or non-loanwords.

In the table below, all of the loanwords that appeared in the text are given. Each of the words that were identified in the text as Arabic loanwords are represented with IPA transcription to indicate the way the word was pronounced by a speaker from each generation.

Table 3.2: Loanword Identification and IPA Transcription

Loanword	First-SP 2	Second-SP1	Third-SP 17
acelga	a.ˈsɛl.ga	a.ˈsɛw.gə	
açougue		a.sọ̯.gɪ	
adobe			
alambique		a.lã.ˈbi.kɪ	
alcaparra		al.ka.ˈpa.xə	
alcorão		al.ku.ˈrãʊ̯	aw.ku.ˈrãʊ̯
alcunha		aw.kʊ.ɲə	
aldeia		aw.ˈdeɪ.ə	
alecrim		a.le.ˈkɾĩ	
alfândega		aw.ˈfã.dʒɪ.gə	
alfinete		al .fi.ˈne.tʃɪ	
alfombra		aw.ˈfõ.brə	aw.ˈfõ.brə
álgebra	al.ˈʒe.brə	ˈal.ʒe.brə	
algodão		al.gõ.ˈdãʊ̯	
almôndega		aw.ˈmõ.de.gas	
anil			
arraial			
arroba			
atum	a.ˈtũ		
aval			
azar		a.ˈzaɾ	
azeite	a.ˈzeɪ̯.tɪ	a.ˈzeɪ̯.tʃɪ	
azeitona	a.zeɪ.ˈtõ.nə	a.zeɪ.ˈtõ.nə	
azougue			a.ˈsọ̯.gɪ

Table 3.2: Loanword Identification and IPA Transcription (continued)

Loanword	First-SP 2	Second-SP1	Third-SP 17
balde			
candil			
cuscuz	'kus'kus		
elixir			
emir			
enxaqueca			
enxoval.			
fatia			
fulano			
garrafa			
girafa	ʒi.'ɾa.fə		
giz			
guitarra			
haji	'haʒ	'xa.ʒɪ	'xa.ʒɪ
haquim			xa.'kim
haxixe	ha.'ʃi.ʃɪ	xa.'ʃi. ʃɪ	
hena	'he.nə	'xe.nə	
jasmim	ʒaz.'mĩ	ʒaz.'mĩ	
leilão			
mameluco			
marfim			
mascate		mas.'ka.tʃɪ	
masmorra		maz'mo.ɾə	
mesquita		mes.'ki.tə	
mufti		'muf.tɪ	'muf.tʃɪ
nuca			
quibe	'ki.bɪ	'ki.bɪ	'ki.bɪ
quintal			

Table 3.2: Loanword Identification and IPA Transcription (continued)

Loanword	First-SP 2	Second-SP1	Third-SP 17
roque			
sura		ˈsu.ɾə	ˈsu.ɾə
talco			
tambor			
tarefa			
tarifa			
xadrez			
xaquemate		ʃek.ˈma.tʃɪ	
xarope			
Mecca	ˈmɛ.kə	ˈmɛ.kə	
Hasan	xa.ˈsã	xa.ˈsã	a.ˈsa
caravana			
Total Identified	13	33	10
Relative % correct	20	51	15

Data from Table 3.2 reveal that each speaker identifies different amounts and types of loanwords. In this sample, loanword perception is not related to being a first-generation Lebanese-Brazilian, since the second-generation Lebanese Brazilian correctly identifies more Arabic loanwords than the speaker from the first generation does. In addition, production of loanwords varies with regards to Brazilian assimilation and perception of word origin.

In comparing the transcriptions of the first, second and third-generation Lebanese Brazilians, phonological variability occurs in production of Brazilian Portuguese. In first generation, variation occurs in both words of Arabic origin as well as words that are not. These results are consistent with those obtained in the spontaneous speech sample for this subject.

In this sample, loanwords are produced variably regardless of whether they are perceived as such depending on generational membership. Consider the case of /l/ and production of vocalization. In the sample from the second-generation participant, /l/ is produced variably only in words of Arabic origin. This subject did not exhibit this variation in the Portuguese spontaneous speech sample provided. In the third-generation participant, there is no evidence of variability, even in cases when the word is perceived to be of Arabic origin. The following table provides an illustration of the variation described above.

Table 3.3: Production of /al/ in Arabic Loanwords - First Generation

Vocalized	Not Vocalized
	a.'sɛl.ga
	al.'ʒe.bra

Table 3.4: Production of /al/ in Arabic Loanwords - Second Generation

Vocalized	Not Vocalized
a.ˈsɛw.gə	al.ka.ˈpa.xə
aw.kʊ.ɲə	al.ku.ˈrɑ̃ʊ̯
aw.ˈdeɪ.ə	al .fi.ˈne.tʃɪ
aw.ˈfɑ̃.dʒɪ.gə	ˈal.ʒe.brə
aw.ˈfõ.brə	al.gõ.ˈdɑ̃ʊ̯
aw.ˈmõ.de.gəs	

Table 3.5: Production of /al/ in Arabic Loanwords - Third Generation

Vocalized	Not Vocalized
aw.ku.ˈrɑ̃ʊ̯	
aw.ˈfõ.brə	

In this example, results indicate that across Arabic loanwords sharing the same phonological environment, there is inconsistency in production by the same speaker as well as across generational groups.

In the following example, data from the first-generation subject reveal that inconsistencies occur in the production of loanwords and non-loanwords, regardless of perception. This example is important because it shows variation of the individual in context showing inconsistencies across words of Arabic origin as well as words that are not and share the same phonemic sequences and phonological environments.

SP 2

[o.mas.ˈka.tɪ.ʒʊ.ãu̯ˈku.ʒə.al.gʊ.ˈɛ.ʒo.ˈãu̯.e.ˈmiɾ.ˈɛ.ˈu.mə.
ma.ˈma.lu.kʊ.ˈpor.ˈkaw.zə.ˈda.ˈseu.pro.fi.ˈsãu̯.ˈu.zə.ˈũ.mə.
ˈblu.zə.ˈdɪ.al.gõ.ˈdãu̯.ˈɪ.a.vis.tə.ˈka.də.a.ɾɪaw.ˈdə.ˈsu.ə.
xe.ˈʒiãu̯ .ˈpa.ɾə.vẽ.ˈdeɾ.aɾ.ˈti.gʊz.di.ˈveɾ.sʊsˈbal.dɪ.pa.ˈ
nɛ.lə.sa.bãu̯ .ˈtal.kʊ.peɾ.ˈfu.mɪ.ˈhẽ.nə.ʃa.ˈpɛw.ˈkã.dĭl.ˈli
.vroz.ka.ˈʃa.sə.ˈɪ.a.lã.ˈbi.kɪ.tɪ.ˈsi.dʊ.al.fi.ˈne.tɪ. o.
troz.ˈmuɪ̯.tʊz.aɾ.ˈti.gʊz.ˈdɪ.ĩ.ʃo.ˈval.to.daz. ves.ki.ʒu.ˈã
u̯.vi.ˈa.jə.ˈpa.ɾə.ˈou̯.trʊz.pa.ˈi.zez. ˈda.ã.me.ˈɾi.kə. la.ˈ
ti.nə.ˈpa.rə.vẽ.ˈdeh.ˈsuəs.pro.ˈdu.toz.ˈ pɾe.si.zə.kõ.seˈgi
r.ˈo.a.ˈval.ˈdɪ.al.ˈfã.de.gəs.pa.ˈgã.dʊ.ˈu.mə.ta.ˈɾi. fə.ˈt
o.dʊz.ˈdi.az.ʒu.ˈãu̯.al.ˈmo.sə.ˈnə.ˈka.zə.ˈda.ˈsua.ˈmãɪ.ˈdo.
nə.ˈnu̯.zə.ˈa.ˈka.zə.ˈde.lə.ˈɛ.ˈdʊ.a.ˈdʊb.ˈe.fi.kə.ˈẽɪ.ˈu.mə
.al.ˈdeɪə.ˈki.ˈse.ˈʃa.mə.sɛ.ˈl.a.ˈnil.ˈpɛh.tʊ.ˈdɪ.ˈõ.dɪ.ˈel
ɪ.ˈmɔ.rə.ʒu.ˈãu̯.kos.ˈtu.mə.ˈiɾ. ˈpa.ɾə.a.sọ.gɪ.ˈka.də.ˈkwaɾ
.tə.ˈfe.ɾə.ˈpa.ɾə.kõ.ˈpɾaɾ.ˈũ.a.ˈxo.bə.ˈdɪ.ˈbọɪ.ˈo.ʒɪ.ˈpor.
ˈseh.ˈseu.a.ni.veɾ.ˈsa.ɾiu̯.ˈfoɪ̯.ˈũ.ˈdiə.es.pe.si.ˈal.ˈdo.nə
.ˈnu̯.zə.ˈela.de.ˈu.ˈko.mʊ.pre.ˈzẽ.tɪ.ˈu.mə.pe.ˈkẽ.nə.ˈʒi.ɾa
.fə.dɪ.maɾ.ˈfĩ.ˈʊ.ˈkwal.ˈe.la.kõ.ˈpɾo.ˈẽɪ̯.ˈũ.leɪ̯.ˈlãu̯.tã.ˈb
ẽ̯ɪ.ˈfez. umə.kõ.ˈmi. də.pɾe.di.ˈlɛ.tə.a.ˈsɛl.ga.ˈkõ.a.ˈzeɪ̯.
tɪ.ˈfrã.gʊ.ˈkõ.a.le.ˈkɾĩ.a.ˈtũ.ˈkõ.ˈmo.ʎʊ.ˈdɪ.al.ka.ˈpa.xə.
ˈkus.ˈkus.ˈdɪ.mã.dʒi.ˈɔ.kə.ˈkõ.a.zeɪ.ˈtõ.nə.iˈũ.ˈʃa.ˈdɪ.ʒaz
.ˈmĩ.ˈkõ.ʃa.ˈɾɔ.pɪ.dɪ. mo.rã.gʊ.ˈmaɪ̯s.ˈtaɾ.dɪ.ˈnə.ˈmez.mʊ.ˈ
diə.ʒʊ.ˈãu̯.sa.ˈɪu̯.ˈkõ.ˈseuz.ã.ˈmi.gʊz.ˈpa.ɾə.kõ.mẽ.mo.ˈɾaɾ.
ˈũ.ˈbar.ˈkɪ.ˈfi.kə.ˈnũ.si.ˈtʃiu̯.a.ˈlẽɪ̯.ˈdɪ.ˈteh.tõ.ˈma.dʊ.ˈ
u.mə.ga. ˈxa.fə.ˈdɪ.seɾ.ˈve.ʒə.ko.ˈmeu̯.ˈki.bɪ.dɪ. ti.ɾa.ˈgo
s.tʊ.ˈ.al.ˈmõ.de.ga.ˈkõ.ˈu.mə.ˈfa.tiə.ˈdɪ.ˈkeɪ̯.ʒʊ. poɾ.ˈsi
.mə.ˈtʊ.dʊs.ˈsɪ.di.verˈti.ɾãu̯.ˈmu̯.tʊ.ʒo.ˈgã.dʊ.ʃaˈdɾes.ˈna.
ˈfɛs.tə.de.xe.ˈpẽ.tɪ.de.ũ.ˈgɾa.ndɪ. ʒo.ˈga.də.alˈguẽɪ̯. pe.
ˈgo.ˈʊ.ˈxo.kɪ.ˈdɪ.gri.ˈto.ˈʃek.ˈma.tɪ.a.ˈviə.ˈũ.ˈʃo.ˈdɪ.ˈũ
.ˈgɾu.pʊ.mu.zi.ˈkal.ˈkɪ.tɾo.ˈka.və.ˈnʊ.kĩ.ˈtal.ˈdʊ. ˈs
i.tʃiu̯.ˈkõ.mo.gi.ˈta.xə.ˈɪ.ˈtã.boɾ.du.ˈɾã.tɪ a ˈmu.zi.

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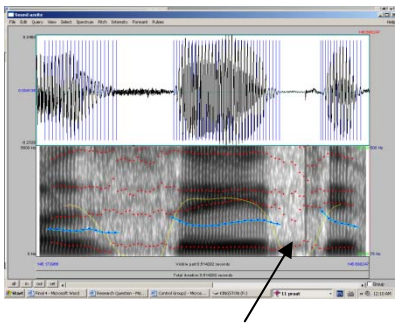
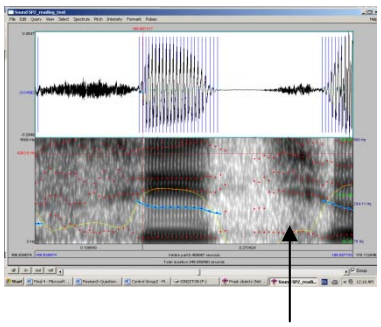
Below is a list of words that this speaker believed to be of Arabic origin, accompanied by the way that the speaker produced these words.

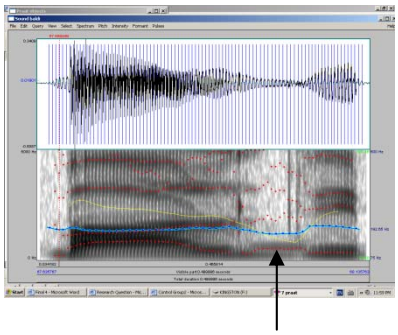
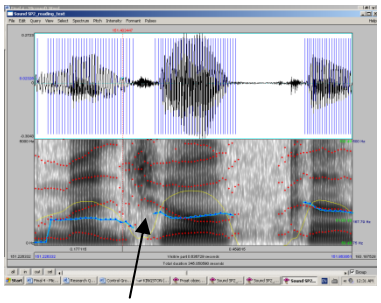
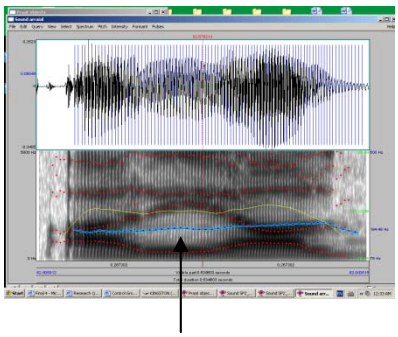
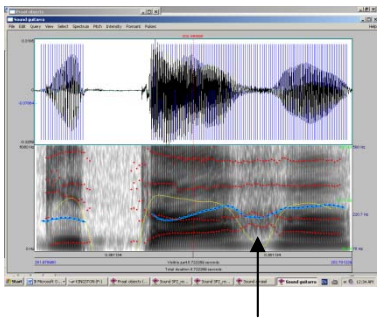
Table 3.6: Arabic Loanword Identification and IPA Transcription- First Generation

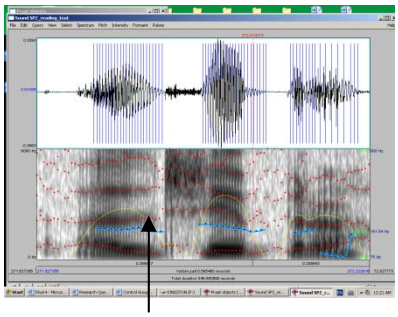
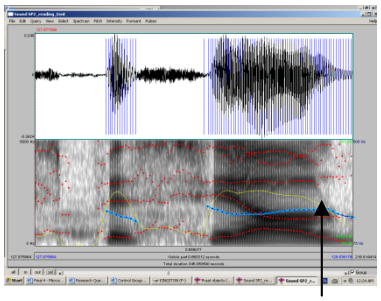
Arabic loanword	Gloss	Transcription
acelga	chard	a.ˈsɛl.ga
álgebra	algebra	al.ˈʒe.brə
atum	tuna	a.ˈtũ
azeite	olive	a.ˈzeɪ.tɪ
azeitona	oil	a.zeɪ.ˈtõ.nə
blusa	blouse	ˈblu.zə
chá	tea	ˈʃa
cuscuz	cuscus	ˈkus.ˈkus
girafa	giraffe	ˈʒi.ɾa.fə
haji	haj	ˈhaʒ
Hasan	hasan	ha.ˈsa
haxixe	hash	ha.ˈʃi.ʃɪ
hena	hena	ˈhẽ.nə
jasmim	jasmine	ʒaz.ˈmĩ
Mecca	Mecca	ˈme.kə
perfume	perfume	peɾ.ˈfu.mɪ
quibe	kibe	ˈki.bɪ
ramadã	Ramadan	xã.ma.ˈdan
sabão	soap	sa.ˈbãʊ

In this speaker, there is evidence for phonological variation in the production of loanwords vs. non-loanwords in the same phonological environments. In Table 3.7, acoustic evidence is provided that clearly illustrates the differences in production of the variable phonemes. The variable phoneme appears is highlighted in the phonetic transcription and in the spectrogram below, an arrow indicates the differences in sound.

Table 3.7: Variation in the Production of Assimilation Between Arabic Loanwords and Non-loanwords with acoustic evidence for differentiation

Phoneme	Arabic Loanword transcription No assimilation	Non- Arabic Loanword transcription Assimilation	Type of Assimilation
/t/	a.ˈzeɪ̯.**tɪ** 	si.ˈ**tʃ**iu 	palatalization

/d/	'bal.**dɪ** 	ma.'**dʒɪ**.o.kə 	palatalization
/r/	a.**ɾɪ**aw 	gi.'ta.**xə** 	velarization

/l/	'al.ʒe.brə 	es.pe.si.'aw 	vocalization

These data confirm that a native Arabic speaker varies his or her production of Brazilian Portuguese sound patterns including loanwords of Arabic origin; however this is not in all cases, as exhibited in Table 3.8.

Table 3.8: Perception of Arabic Loanword and Incorporation of Assimilation

Perceived as Arabic Loanword	Arabic Loanword	IPA	Portuguese Word	Gloss
yes	yes	xã.ma.ˈdan	ramadán	ramadan
yes	yes	a.ˈzeɪ̯.tɪ	azeite	olive oil
no	yes	mas.ˈka.tɪ	mascate	peddlar
no	yes	ˈbal.dɪ	balde	container
no	no	ˈsi.tʃiʊ̯	sitio	place
no	no	mã.dʒi.ˈɔ.kə	mandioca	tapioca
no	no	a.bi.li.ˈda.dʒɪ	habilidade	ability
no	no	ˈõ.dɪ	onde	where
no	no	du.ˈrã.tɪ	durante	during

In this subject, there is inconsistency in the production of assimilation specific to Brazilian Portuguese and not Lebanese Arabic phonology. In some cases, there is a correlation of awareness of the Arabic origin of the word and the incorporation of palatalization, vocalization or velarization. Consider that inconsistent production of palatalization of /t/ in the words /ˈsi.tʃiʊ̯/ and /a.ˈzeɪ̯.tɪ/. The word /ˈsi.tʃiʊ/ neither is of Arabic origin nor was it perceived as such, and /t/ is

palatalized. In the word /a.ˈzeɪ̯.tɪ/ which is an Arabic loanword and is perceived as such, palatalization of /t/ does not occur in this speaker. In another Arabic loanword, *mascate,* even though this word is not perceived as being of Arabic origin, /mas.ˈka.tɪ/ maintains the original Arabic phonology by not implementing assimilation specific to Brazilian Portuguese.

In further examination of assimilation and other phenomena, it is observed that in no circumstances did this subject vocalize when producing an Arabic loanword, whether or not it was perceived as such. In non-Arabic words, vocalization was incorporated variably. Variability in velarization occurs in words of Arabic origin /ˈxo.kɪ/ and /xã.ma.ˈdan/, while *roque* is not perceived as an Arabic loanword and *ramadan* is, velarization of /ɾ/ occurs in both of these loanwords regardless of whether or not the loanword is perceived as being of Arabic origin. Results of this case study indicate that production of Brazilian Portuguese assimilation is variable in native speakers of Arabic and extends to loanwords of Arabic origin, whether or not they are perceived as such.

3.4.5 Summary of Pilot Study

The study is able to address each of the research questions both quantitatively and qualitatively. A summary of the pilot study and how it addresses the research questions is as follows:

1. There is a relationship observed between language maintenance of Arabic and being a first, second and third-generation Lebanese Brazilian. Maintenance of Arabic varies situationally. Competency in different aspects of language usage varies among subjects according to answers reported on the questionnaire. First-generation Lebanese Brazilians are most comfortable in completing the spontaneous speech task in Arabic, whereas members of the third generation are unable to complete this task.

2. Language transfer of phonological elements from Arabic into Brazilian Portuguese is most evident in speakers who are originally from Lebanon and whose native language is Arabic. In both spontaneous and scripted speech there are inconsistencies found in the production of Brazilian Portuguese.

3. Both Lebanese natives and Arabic heritage speakers who have knowledge of Arabic in some cases apply Arabic phonology to the production of loanwords. This link to perception is not found in all cases. In the three types of assimilation analyzed, variation occurs at different rates by members of the first generation, in both loanwords of Arabic origin as well as non-loanwords.

The pilot study confirms that Arabic language usage varies in the Lebanese Brazilian community in São Paulo in both the maintenance of the language and in how the language affects spoken Portuguese. The maintenance and usage of the Arabic language in Brazil affects the production of Brazilian Portuguese, in members of the first generation. Words of Arabic origin are found to be produced variably by Lebanese Brazilians in São Paulo, even in cases where speakers are not members of the first

generation. In summary, both the perception and production of loanwords of Arabic origin varies in a population that has Arabic language experience.

While maintenance of the Arabic language in Brazil is affected by sociological factors, a further relationship can be explored by examining maintenance of certain phonological aspects from Arabic in the production of Brazilian Portuguese. It is in members of the first-generation members of the Lebanese-Brazilian population who have emigrated from Lebanon, where most variation is found, as these speakers use sounds from both Portuguese and Arabic in loanwords and non-loanwords.

3.5 FINAL PROCEDURE

Sample:

	Men	Women
*First	5	5
Second	5	5
Third	5	5

At least five people in each category will be included in the experiment. More people will be sought in the first generation in order to facilitate detailed statistical analysis of this population with regards to the question of assimilation. Both the control group and the pilot study justify the examination of this group with regards to variability in comparison to the other groups. The second and third generations will be the focus of the questionnaire and perception task, while the first generation is the focus of the production task.

Tasks:

Questionnaire: Subject provides information in reference to background and language usage
Perception Task: Subject identifies words of Arabic origin that are in a text.
Production Task: * First Generation: Subject produces spontaneous speech in Arabic and Portuguese and reads from a text in Portuguese.

Multiple tasks are used to take into account variation and reliability. Language ability is measured through self-report in the questionnaire and a speech sample. The perception task is related to the production task.

Equipment:

Leonardo Almeida and Marcelo Negri Pimentel, affiliated with CEFALA at the Federal University of Minas Gerais, designed a computer program in which subjects' results relating to the questionnaire and the perception task were recorded, stored and sorted in a database. The advantage of using this program is that data are made available to the researcher in an electronic format, ensuring that all questions of the test are answered. In this way, results are complete and there is less room for error in data collection

Subjects were recorded using a Roland digital recorder model R-09 24-bit wave/Mp3 using 16 bit wave files. Then these recordings were burned to a CD and filed.

Analysis of Data:

Quantitative Analysis

Tests that can support multivariable analyses are used to analyze data including ANOVA, T-test, correlations and crosstabulations. All statistics are analyzed using the program SPSS 13.0 and EXCEL. In cases where it was questionable which phoneme is produced, particularly in cases if it is necessary to discover whether the subject is making a phonological adjustment or not, PRAAT software is implemented. Acoustic phonetics is used as a way to obtain a visual representation of the sound. Through the use of a spectrogram, a more objective decision concerning the nature of the sound, particularly concerning the presence of a phonological adjustment can be made.

The answers provided in the questionnaire are given a numerical value and results are tabulated and compared across different subgroups in the population. In the perception task, the subject can either accept or reject words as being of Arabic origin, and these results are tabulated and ranked among members. Further analyses examine both trends and inconsistencies in the type of words chosen or not by groups and individuals. The relationship between sociological information provided in the questionnaire is correlated to performance on the perception task and how these variables relate to production.

Qualitative Analysis

Qualitative methods are used to examine the degree to which contact of these languages may be affected, taking into account gradation in variability. In providing case studies of the first generation, a complete phonetic transcription of a subject indicates subtleties that exist within an individual and the degree of gradation that occurs. Transcriptions can support quantitative data in the event that more information is needed to examine the performance of the individual in the entirety of his or her speech sample. In addition, observations from the actual interviews and metalinguistic commentaries from subjects are considered.

4. Results

This chapter discusses the results of the experiment. Table 4.1 provides the demographic make-up of the population sampled which includes three generations of Lebanese-Brazilians (SP). Each subject's sociological background is provided in Appendix E.

Table 4.1: Demographic Characteristics of Sample

Age	Number (Percent Surveyed)
18 – 25	5 (10%)
26 – 35	5 (10%)
36 – 45	15 (30%)
46 – 55	8 (16%)
56 – 64	6 (12%)
65+	12 (24%)
Sex	
Male	25 (49%)
Female	26 (51%)
Education	
$\geq 8^{th}$ grade	7 (14%)
High school	2 (4%)
Some college	10 (20%)
College graduate	23 (45%)
Graduate School	9 (18%)

4.1 VARIATION IN ARABIC LANGUAGE USAGE

Research Question #1: Is there variation in the usage of Arabic within the Lebanese-Brazilian community in São Paulo?

In order to address this question, it is imperative to discover who uses Arabic in São Paulo, in what circumstances, to what extent and how often. Research findings are based on self-reports as well as spontaneous speech samples in Arabic. Results indicate that Arabic language usage in São Paulo in three generations of Lebanese-Brazilians not only varies according to membership of a group, but also according to situation and sociological factors.

4.1.1 Variability of Language Usage

Table 4.2: Uses Arabic in School

Generation	Never	Sometimes	Always
First	6 (27%)	8(36%)	8(36%)
Second	12 (67%)	5(28%)	1(6%)
Third	8 (89%)	1(11%)	0 (0%)

Table 4.3: Uses Arabic at Home

Generation	Never	Sometimes	Always
First	0 (0%)	13(59%)	9(41%)
Second	2(11%)	11(61%)	5(28%)
Third	7(78%)	2(22%)	0(0%)

Table 4.4: Uses Arabic at Job

Generation	Never	Sometimes	Always
First	5(23%)	14(67%)	3(14%)
Second	11(61%)	7(39%)	0(0%)
Third	8(89%)	1(11%)	0(0%)

Table 4.5: Uses Arabic in Religion

Generation	Never	Sometimes	Always
First	2(9%)	10(46%)	10(46%)
Second	9(50%)	5(28%)	4(22%)
Third	7(78%)	2(22%)	0(0%)

Table 4.6: Uses Arabic with Friends

Generation	Never	Sometimes	Always
First	1(5%)	17(77%)	4(18%)
Second	6(33%)	11(61%)	1(6%)
Third	7(78%)	2(22%)	0(0%)

Table 4.7: Uses Arabic in Email

Generation	Never	Sometimes	Always
First	16(73%)	6(27%)	0 (0%)
Second	17(94%)	1(6%)	0 (0%)
Third	9(100%)	0(0%)	0 (0%)

Table 4.8: Uses Arabic on Phone

Generation	Never	Sometimes	Always
First	0(0%)	17(77%)	5(23%)
Second	8(44%)	9(50%)	1(6%)
Third	8(89%)	1(11%)	0(0%)

Results of these crosstabulations indicate that differences in usage exist across generational groups and contexts. Both variables are shown to be related. Consistently across all contexts, members of the first generation were most likely to use Arabic "always," at home, in religious practices and on the telephone. However, in the second

generation, only one subject reported always using Arabic on the phone. Not surprisingly, third generation never used Arabic "always" in any situation - only "never" or "sometimes". This may indicate that in addition to Arabic being used situationally, the less consistent use of the language could be an indicator that Arabic is gradually slipping towards total disuse among Brazilian Portuguese speakers.

The second point to be gathered from these results is in reference to the effect of context on the usage of Arabic. In all three generations, Arabic seems more likely to be used in the home than in any other context. All of the first generation study participants report using Arabic at home, while 89% of speakers report using it there in the second generation. In the third generation, only 22% of speakers reported using Arabic at home. In this context, percentages dramatically decline from second to third generation. Usage of Arabic in other situations could be linked to whether or not Arabic language usage is maintained in the home.

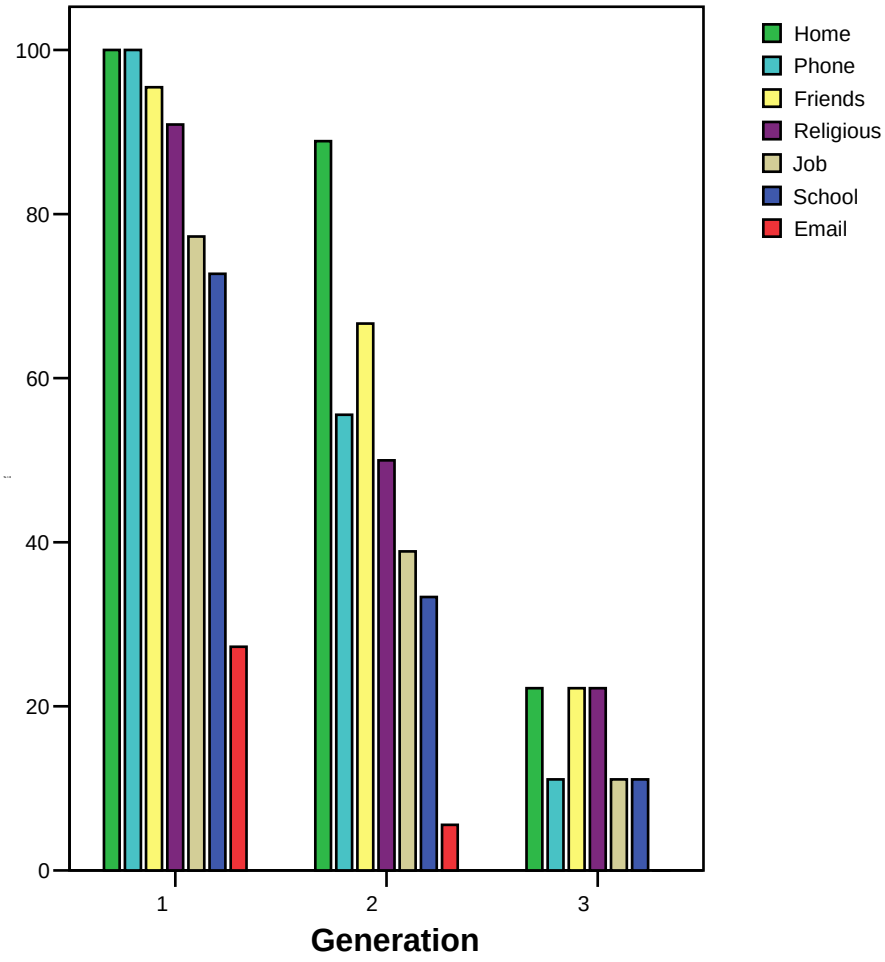
The situation that is least frequently reported in all three generations of Arabic usage is email. Results show that no one in the third generation reported using Arabic in this capacity. The fact that more first-generation participants reported using Arabic in their email correspondence than third-generation participants' use of Arabic in the home attests to the general decline in the use of Arabic by members of the third generation

The significance of the relationship between situational use of Arabic and membership in a group is illustrated in Table 4.9.

Table 4.9: Significance of Situational Use of Arabic

Situation	Chi Square Results
School	χ^2 (4) = 14.14 p<.05
Home	χ^2 (4) = 27.58 p<.01
Job	χ^2 (4) = 14.40 p<.05
Religion	χ^2 (4) = 14.40 p<.05
Friends	χ^2 (4) = 18.05 p<.05
Email	χ^2 (4) = 5.65 p>.05
Phone	χ^2 (4) = 25.61 p<.01

Figure 4.1: Situational Use of Arabic in Three Generations

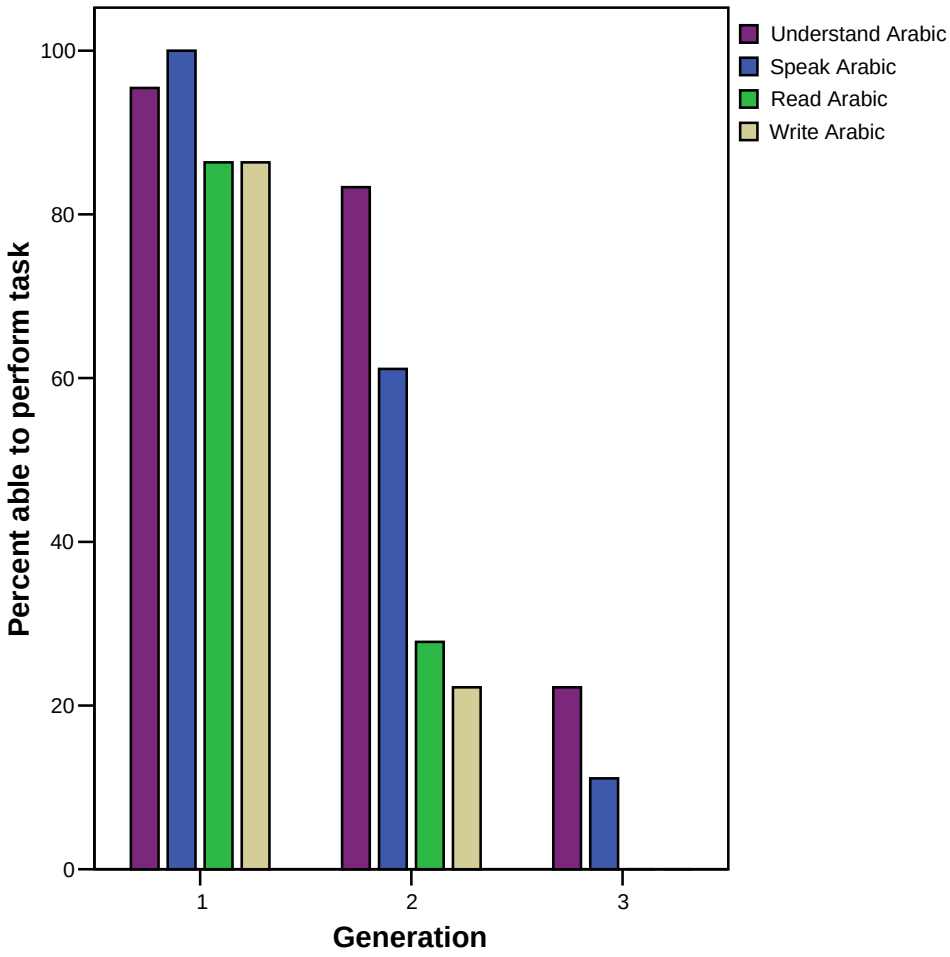


These data portrayed in this graph confirm that there was a correlation between the gradual disuse of Arabic and membership in a group. This figure illustrates that maintenance in different contexts is similar across groups.

4.1.2 Language Ability

Since a relationship can be established between generational membership and situational use, in the next figure, type of ability in the Arabic language is explored.

Figure 4.2: Arabic Language Ability



A relationship can be established between decline in competencies of Arabic and generational group membership. In the overall population surveyed, as well as within members of specific generational groups, Arabic language ability varies depending on the task. In examining the four competencies related to Arabic language maintenance, there is a decline in language competency in second and third-generation members of this community. Speaking and understanding Arabic are skills that all groups possess, but there is drastic decline of reading and writing ability in the second generation, and

eventual disuse in the third generation. In the Tables 4.10-4.13, crosstabulations reveal the degree to which a relationship exists between language disuse and language ability in three different generations of Lebanese Brazilians.

Table 4.10: Ability to Speak Arabic

	Speak Arabic	
Generation	no	yes
First	0(0%)	22(100%)
Second	7(39%)	11(61%)
Third	8(89%)	1(11%)

χ^2 (2) = 24.67 p<.05

Table 4.11: Ability to Understand Arabic

	Understand Arabic	
Generation	no	yes
First	1(5%)	21(95%)
Second	3(17%)	15(83%)
Third	7(78%)	2(22%)

χ^2 (2) = 20.22 p<.05

Table 4.12: Ability to Read Arabic

	Read Arabic	
Generation	no	yes
First	3(14%)	19(86%)
Second	13(72%)	5(28%)
Third	9(100%)	0(0%)

χ^2 (2) = 24.18 p<.05

Table 4.13: Ability to Write Arabic

	Write Arabic	
Generation	no	yes
First	3(14%)	19(86%)
Second	14(78%)	4(22%)
Third	9(100%)	0(0%)

χ^2 (2) = 26.11 $p<.05$

Results reveal that there is variation in the maintenance and usage of Arabic. The crosstabulations indicate that a significant relationship can be established between gradual disuse of Arabic and type of language ability in three generations of Lebanese Brazilians.

Ability in other languages

Language ability is further analyzed in this community by taking into consideration prior language experiences. Particularly in the case of first-generation Lebanese Brazilians, the effect of transfer of these other languages on variation of Brazilian Portuguese should be addressed.

Table 4.14: English Language Ability

Generation	Understand	Speak	Read	Write
First	13 (59%)	11(50%)	14(64%)	12(55%)
Second	13 (72%)	11(61%)	11(61%)	10 (56%)
Third	5 (56%)	6 (67%)	4(44%)	5 (56%)

Table 4.15: French Language Ability

Generation	Understand	Speak	Read	Write
First	15 (68%)	14(64%)	19 (86%)	14 (64%)
Second	9 (50%)	5(28%)	6 (33%)	4 (22%)
Third	4(44%)	5(56%)	5 (56%)	3 (33%)

Table 4.16: Other Language Ability

Generation	Understand	Speak	Read	Write
First	10(46%)	8 (36%)	9(41%)	4(18%)
Second	5(28%)	5 (28%)	3(17%)	1(6%)
Third	4(44%)	4 (44%)	4(44%)	3(33%)

While no relationship is established between the gradual disuse of non-Arabic languages and membership of a generational group, some observations can be made concerning specific language usage. The French language is used by first-generation Lebanese Brazilians more than in any other generation. A reason for this is that many first generation speakers reported that when they were in school in Lebanon, they studied French, as it had been an official language for part of the twentieth century. In the second and third generations, English is seen as being the non-native language with which speakers have the most familiarity. Based on these findings, it seems that English has been given more priority by second and third-generation Lebanese Brazilians instead of Arabic, their heritage language. French is reported to be acquired before Portuguese in the majority of the first-generation subjects surveyed. Therefore, French interference is a

possible consequence of language transfer in the production of Brazilian Portuguese by first-generation Lebanese immigrants.

4.2 VARIATION IN THE PRODUCTION OF BRAZILIAN PORTUGUESE: INDIVIDUAL ANALYSES

In first-generation Lebanese Brazilians, is there evidence for phonological variability in the production of Brazilian Portuguese, and does this extend to words of Arabic origin?

In order to explore variation in the individual, data from three native speakers of Arabic in the Lebanese-Brazilian community are provided. A brief sketch of each subject is provided, which includes sociological information addressing language usage. To discover whether or not these subjects have command of spoken Arabic, a transcription of an Arabic speech sample is provided.

To address the part of the research question dealing with variation of spoken Brazilian Portuguese, a sample consisting of spontaneous speech and scripted speech is collected in order to address how Arabic language transfer affects variation in the production of Brazilian Portuguese. Lastly, the standardized reading is transcribed in both IPA and Portuguese to illustrate how the subject articulated what he or she read in the text.

Case Study Overview

SP 3 is a first-generation Lebanese-Brazilian male between 36-45 years old. His highest level of education is graduate school. His preference is to use both Arabic and Portuguese in Brazil when given the choice. This answer supports his preference for frequently using the Arabic language. He reports using Arabic always in his religion, sometimes on the phone and with friends, sometimes at school and his job, and never on email. He reports being able to read, write, speak and understand Portuguese, Arabic, English and French, and has knowledge of no other languages.

SP 26 is a first-generation Lebanese-Brazilian female between 36-45 years old. Her highest level of education is graduate school. Her preference is to use both Arabic and Portuguese in Brazil when given the choice. This answer supports her preference for frequently using the Arabic language. She reports using Arabic always on the phone and with friends, sometimes at school and her job, and sometimes in her religion and email. She reports being able to read, write, speak and understand Portuguese, Arabic and English. She reports only being able to read and understand French. In addition, she reports being able to speak, read and understand another language.

SP 27 is a first-generation Lebanese-Brazilian male between 46-55 years old. His highest level of education is college. His preference is to use both Arabic and Portuguese in Brazil when given the choice. This answer supports his preference for frequently using the Arabic language. He reports using Arabic always on the phone and with friends, at school and his job, always in his religion, and sometimes with email. He reports being able to read, write, speak and understand Portuguese, Arabic, and French and has

4.2.1 Arabic Speech Sample-Spontaneous Speech

SP3

When we used to play- we were around six years old- me and friends I go and bring the car to us to the street- we ride and while we drive and while we are driving afterwards he starts speeding up. We threw ourselves from the car when we threw ourselves like this without consciousness. After we threw ourselves from the car, we didn't wake up until in the hospital

نحنا كنّا ما نلعب كمان كان عمرنا شي سن سنين. أنا ورفقات وبقوم بجيب السيارة لعـندنا عالشارع نركب فيها ونحنا طالعين بعدين ___ هو صار يسرع وكبينا حالنا من السيارة وقتها كبينا حالنا هيك بدون وعي بعدين كبّنا حالنا من السيارة صحينا بالمستشفى.

SP26

Next week my mom is coming from Canada. She is going to stay and visit me two months with me. That's why I've been like a crazy person! I am organizing and cleaning the house. Everyone knows that when the mom comes, she starts to see when something is disorganized or dirty. I'm cleaning the couches and preparing her room.

الجمعة الجاي الماما ما راح تجي من كندا علشان تزورني وراح تبقى شهرين عندي. علشان هيك أنا هلّق متل المجنونة عم بظبط البيت عم بنظفه لأنه كل الناس بعيرفوا أنه لمّن الأم تجي عل البيت بتبلش تشوف وين في وسخ وين في شي مش مظبوط. فانا غسّلت الكنبايات وعم بحضرلها ا وضة.

SP27

The first time that I came to Brazil I didn't know how to speak Portuguese- not a single word. The first word that I learned was on the plane. The word was tea- because the word for tea in Portuguese is same as the word in Arabic-chá. That was the first word that I ever learned. Because I spoke a little French, that made learning the Portuguese language easier.

أوّل مشوار أنا جيت لهون علبرازيل ما بعرف احكي ولا كلمة بورتوجيز. أوّل كلمة تعلّمتها كنت بالطيارة هي كلمة "شا". لانه "الشا" بالعربي كمان شاي، هي أوّل كملة تعلّمتها بس أني جيت عالبرازيل . وبعدين لانّه بحكي شوي فرنساوي صارت اللّغة البرازيلية بالنّسبة الي أهين.

Observations from Questionnaire and Arabic Spontaneous Speech

The three subjects reported in the questionnaire that they vary in their usage of Arabic as well as in other languages. All subjects were able to give a fluent and accurate speech sample in Arabic. No phonological inconsistencies were noticed in the Arabic samples provided.

4.2.2 Portuguese Speech Sample

All three speakers are confirmed as speaking Arabic and report to use the language in different situations. Therefore, the effect of Arabic language transfer on production of both spontaneous and scripted speech in a non-native language, Brazilian Portuguese, can be analyzed. Inconsistencies appearing in production are marked with a number within the transcription. The implications that these adjustments have on the production of Brazilian Portuguese are then addressed following the text.

Portuguese Spontaneous Speech

SP 3

English Translation:

What I remember very well when I was a child was when I spoke English for the first time. There was a foreigner, from, a foreigner from Great Britain that was working there Lebanon and we started to speak English and it was for us the first time that we had spoken in English and this was difficult talking or understanding them, but with time, a little bit of time we started to understand with a thing I remember well- about five years old…no he was in Lebanon. He was in Lebanon.

Portuguese Transcription:

O que eu lembro bem quando eu estava[1]criança foi quando falei inglês a primeira vez tinha uma[2]estrangeiro, da, um estrangeiro da Great Britain e tava trabalhando lá no Líbano e a gente começa[3]falar com ele inglês e foi que a gente a primeira vez falamos a inglês e essa foi difícil falando[4] com ele ou entendi[5] eles[6], mas com tempo com pouco tempo e depois começamos entender mas com uma coisa que eu lembro muito bem uns cinco anos.

Table 4.17: Portuguese Spontaneous Speech- SP 3

	Subject said	Gloss	Should Read	Gloss	Explanation
1	estava	was	era	was	use of wrong copulative verb
2	uma	a	um	a	gender mismatch between indefinite article and noun
3	começa	start	começou	started	use of present tense instead of past tense verb
4	falando	talking	falar	to talk	use of gerund instead of infinitive form
5	entendi	I understood	entender	to understand	use of preterite instead of infinitive form
6	eles	they	ele	he	incorrect use of number in the subject pronoun

SP 26

English Translation:

When I came here from Lebanon, I was 19 years old and it was the first big trip that I had ever taken and we came from Lebanon, my mother and me, by a company that at the time made this trip called Air Morroco-Royal Air Morroco. So I was so nervous in the place, I wanted to arrive her in Brazil. It was a dream to see my sister who was here and all. And at night, everyone was sleeping. My mother took some pills in order to be able to fall asleep and all and I nervous that I couldn't sleep. From there, one of the flight attendants talked to me because he saw that I was agitated and this attendant started to talk to me and I didn't understand anything that what language he was speaking to tell you the truth. I knew he was speaking Arabic, it was probably Moroccan, I thought at that time that I should have understood what he was saying but that the Moroccan dialect is very different and hard to be understood by other people and when he figured out that I was not understanding, he started to speak in the standard Arabic and we started to understand each other. He was asking me if I was needing anything and such and he brought me a juice and after invited me to go sit with him in the back and we started to talk the whole night and passed the night this way. But it was a shock for me because up until then, I had never thought about this linguistic question that every country speaks differently from the other and principally that countries in North Africa, principally Morocco, is completely different and can't be understood.

Portuguese Transcription:

Quando eu vim do Líbano para cá, eu tinha 19 anos e foi a primeira viagem na verdade grande que eu fiz e a gente veio do Líbano eu e a minha mãe, pela companhia que na época eles faziam esse trajeto era uma companhia Marroquina, chamada "Air Marrocos"Royal Air Marrocos . Então eu estava tão ansiosa no avião, queria chegar aqui no Brasil, era um sonho para ver a minha irmã que tava aqui e tal e de noite todo mundo dormindo[1], a minha mãe tomou umas pílulas para poder dormir e tal e eu ansiosa não conseguia dormir, aí veio um dos comissários falar[2] comigo porque viu que eu estava agitava[3] e esse comissário começou a falar comigo e eu não estava entendendo nada porque não entendia que língua ele falava na verdade.Eu sabia que ele estava falando deve ser o marroquino e eu achava ate entao que eu deveria entender o que ele estava falando a final nos dos falamos árabe so ali foi entender deve ser bem que ele que o marroquino que o dialecto marroquino e muito diferente e difícil de ser comprendido por outras pessoas ah quando ele percebeu que eu não estava entendendo ele começou a falarpela língua padrão árabe e a gente começou nos entender ele estava me pedindo para ver si eu estava precisando alguma coisa e tal ele me trouxe um suco depois me convidou para sentar com ele atrás começamos a falar e foi passando a noite dessa forma mas foi um choque para mim porque ate então eu não tinha pensado nessa questão lingüística que cada pais fala diferente do outro e principalmente de paises como eses do norte da Africa principalmente Marrocos que e completamente diferente que não da para entender.

Table 4.18: Portuguese Spontaneous Speech- SP 26

	Subject said	Gloss	Should Read	Gloss	Explanation
1	dormindo	sleeping	dormido	asleep	uses gerund instead of participle
2	falar	to talk	falou	talked	uses infinitive form of the verb instead of 3rd person singular preterite
3	agitava	was agitated	agitada	agitated	uses imperfect form of the verb instead of the past participle

SP 27

English Translation:

Hello, good morning. I don't need to say my name, do I? Today, I always start to work early in the morning. I got accustomed to that. When I finish my job in the afternoon. I like to work. I arrived here in Brazil fourteen years ago. I like this country. I think it is a marvelous country. I am owner of a business that has to do with selling products to dentist, you see. I, in addition to this, weekend only for going out. I like to with my son, and if there is time, with my girlfriend. What else? Thank you.

Portuguese Transcription:

Oi Bom dia! Não precisa falar de nome, ne? Hoje, sempre começo a trabalhar de manhã cedo. Acostumei assim. Quando termino meu serviço a[1] tarde... Eu gosto de trabalhar. Cheguei aqui no Brasil faz catorze anos. Eu gosto desse país. Acho um país maravilhoso. E sou dono da[2]empresa que trata de[3] venda produto[4]de dentista, entendeu? Eu mais que isso. Final semana só para passear... Eu gosto com meu filho, se dá com minha namorada. Que mais? Obrigado.

Table 4.19: Portuguese Spontaneous Speech- SP 27

	Subject said	Gloss	Should Read	Gloss	Explanation
1	a	at	na	in the	does not use the preposition in the contracted form
2	da	of the	duma	in a	uses the definite instead of the definite article
3	de	of	da	if the	does not use the definite article in the contracted form
4	venda produto	sale product	venda de produtos	sale of products	does not make the noun plural and fails to produce the preposition

Observations

Data in Tables 4.17-4.19 illustrate that in Portuguese spontaneous speech samples of the three subjects, some type of language transfer from Arabic can be detected. Results indicate that all subjects undergo morphological or syntactic adjustment in their spontaneous speech sample, including mistaken usage of verbal forms and non-agreement in gender and in number with nominal items. Language transfer may also include phonological inconsistencies. Data in Table 4.18 illustrate while the subject did not have many grammatical inconsistencies, IPA transcriptions indicate phonological variation in the production of palatalization of /t/ and /d/.

Table 4.20: Portuguese Spontaneous Speech-Phonological Variation

SP 26

Transcription	Portuguese	Gloss
ˈtʃĩ.ɲə	tinha	had
veɾ.ˈda.dɪ	verdade	truth
ˈgɾã.dɪ	grande	big
a.ˈʒẽ.tʃɪ	a gente	we
dɪ.ˈnoi.tʃɪ	de noite	at night
en.tẽ.ˈdʒiə	entendia	understood
veɾ.ˈda.dʒɪ	verdade	truth
dʒia.ˈlek.tʊ	dialecto	dialecto
di.fe.ˈɾẽ.tɪ	diferente	different
di.fi.ˈsiw	difícil	difficult
a.ˈgen.tʃɪ	a gente	we
ˈtʃĩ.ɲə	tinha	had
di.fe.ˈɾẽ.tɪ	diferente	different
pɾĩ.si.paw.ˈmẽ.tɪ	principalmente	principally
ˈnoɾ.tʃɪ	norte	north
pɾĩ.si.paw.ˈme.tʃɪ	principalmente	principally
to.taw.ˈmen.tɪ	totalmente	totally
di.fe.ˈɾẽ.tʃɪ	diferente	different

Standardized Text

Three subjects read the same standardized text including Arabic loanwords. Transcriptions and translations for each subject may be found in Appendix E. While the aim of this text was to test for phonological variation, subjects made grammatical adjustments when producing this text in the same way they did in Portuguese spontaneous speech samples.

4.3: VARIATION IN THE PRODUCTION OF BRAZILIAN PORTUGUESE ASSIMILATION: GROUP ANALYSES

In the previous sections, variability has been reported in Arabic language usage. In addition, evidence has been provided that Arabic language experience affects the way that Brazilian Portuguese is produced in different types of speech. In this section, phonological variation in the form of assimilation is examined in this population, including loanwords of Arabic origin in the analysis.

These data are collected from the scripted speech of fifteen first generation Lebanese-Brazilian native Arabic speakers. Three types of assimilation: palatalization, vocalization and velarization; are analyzed in the production of this text including in words of Arabic origin. Phonological adjustments and variation occurring in words of Arabic origin are reported.

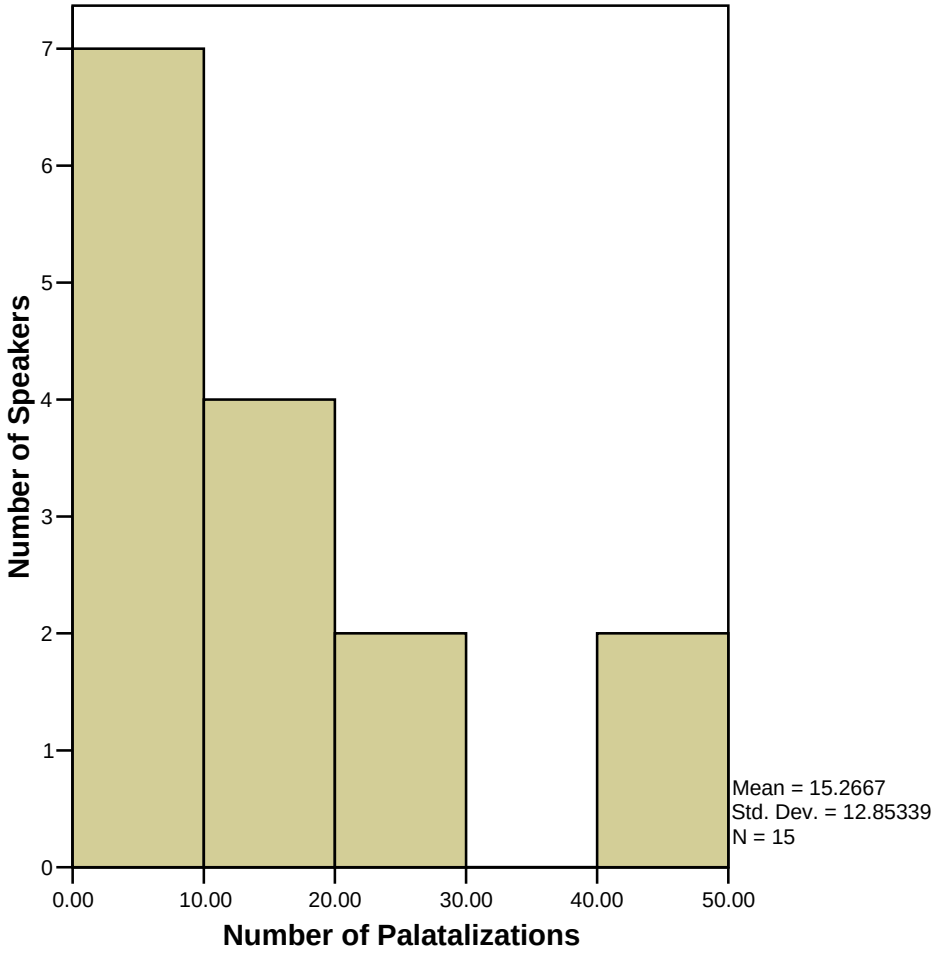
The procedure used to analyze data in statistical form is as follows: First, the researcher made a phonetic transcription of the scripted speech provided by each subject.

Next, words that were capable of undergoing one of the types of assimilation in the target phonemes were extracted from the text and placed in one of three categories: palatalization, vocalization and velarization. Complete transcriptions of these tokens can be found in Appendix F. Then these words were further separated into two other categories: words of Arabic origin, and those that were not. Based upon these transcriptions, the researcher assigned a value to the word in question, indicating whether or not the subject incorporated the type of assimilation in question.

4.3.1 Palatalization

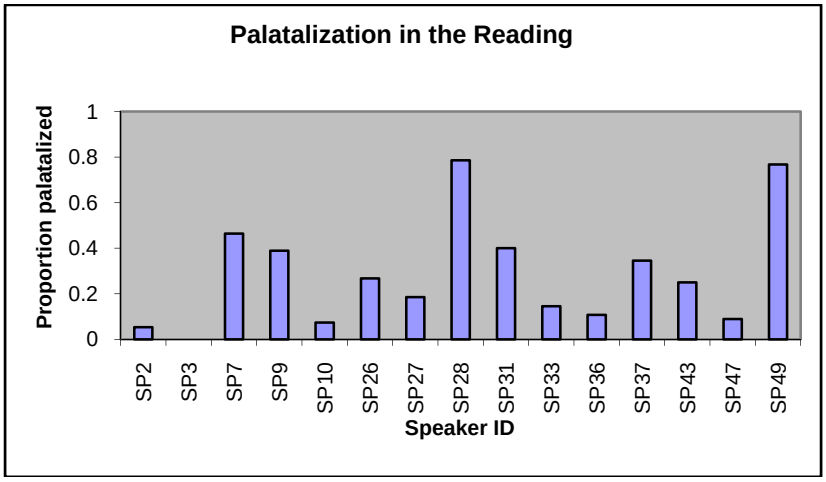
In testing variability in the production of palatalization, both type of phoneme and word are considered.

Figure 4.3: Distribution of Palatalization- First-Generation Scripted Speech



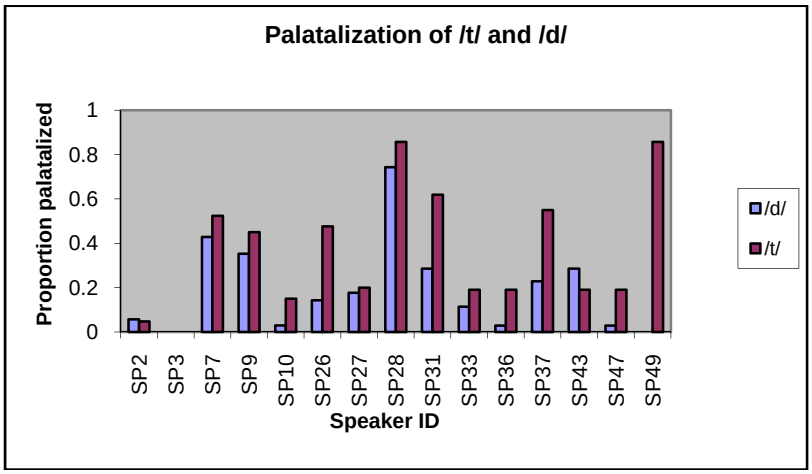
The range of numbers appearing on the x-axis represents opportunities in which the subject could palatalize /t/ and /d/ in the standardized text administered. Of the 15 first-generation speakers performing this task, over half of speakers rarely palatalized, with the remaining subjects increasing gradually in their usage. In Figure 4.4, a further breakdown is provided.

Figure 4.4: Distribution of Individual Palatalization- First-Generation Scripted Speech



Incorporation of palatalization is not consistent among members of this group.. In order to explore this variation more thoroughly, in Figure 4.5 the palatalization of /t/ and palatalization of /d/ are analyzed separately.

Figure 4.5: Palatalization of /t/ and /d/



It is evident that /t/ is palatalized more than /d/ in the majority of these subjects. The degree of variation differs among speakers. These results indicate that in this group, palatalization of /t/ is more prevalent than /d/.

In Figure 4.5, the data show that individual variation occurs in specific phonemes. In other words, the same individual does not palatalize /t/ and /d/ at the same rate. Further measures are taken to examine how an individual varies in the same lexical item. Below, seven words capable of undergoing palatalization of /t/ or /d/ are identified in the chart as appearing in the text more than once. In this analysis, variation in the production of these words is explored.

Phoneme	Portuguese	Gloss
/d/	*de*	of
/d/	*dia*	day
/t/	*artigos*	articles
/d/	*onde*	where
/t/	*sitio*	place
/d/	*grande*	big
/d/	*durante*	during

As shown in Tables 4.21-4.27, in the seven words that were tested there was no overall consistency in the way that all individuals produced these words. In this data, individuals are inconsistent when palatalizing in the same lexical item. In the tables indicated, F is equal to the amount of times that the word appeared in the reading. In all seven lexical items, not only do findings show that palatalization is variable across speakers, but they also show inconsistencies within the same individual producing the same word.

Table 4.21: Variation in Palatalization -'*de'*

de			
		Frequency	Percent
Never	.00	8	53.3
	1.00	2	13.3
	2.00	1	6.7
	3.21	2	13.3
	6.00	1	6.7
Always	8.00	1	6.7

40% of speakers were inconsistent. F=8

Table 4.22: Variation in Palatalization - *'dia'*

dia			
		Frequency	Percent
Never	.00	6	40.0
	1.00	2	13.3
	2.00	2	13.3
	4.00	1	6.7
	5.00	2	13.3
Always	6.00	2	13.3

46.7% of speakers were inconsistent. F=6

Table 4.23: Variation in Palatalization -'*artigos'*

artigos			
		Frequency	Percent
Never	.00	12	80.0
	1.00	1	6.7
Always	2.00	2	13.3

6.7% of speakers were inconsistent F=2

Table 4.24: Variation in Palatalization -'*sitio'*

sitio			
		Frequency	Percent
Never	.00	2	13.3
	1.00	1	6.7
Always	2.00	12	80.0

6.7% of speakers were inconsistent F=2

Table 4.25: Variation in Palatalization -'*grande'*

grande			
		Frequency	Percent
Never	.00	9	60.0
	1.00	4	26.7
Always	2.00	2	13.3

26.7% of speakers were inconsistent

Table 4.26: Variation in Palatalization -*'durante'*

durante			
		Frequency	Percent
Never	.00	9	60.0
	1.00	1	6.7
Always	2.00	5	33.3

6.7% of speakers were inconsistent. F=2

Table 4.27: Variation in Palatalization-*'onde'*

onde			
		Frequency	Percent
Never	.00	7	46.7
	1.00	2	13.3
	2.00	3	20.0
Always	3.00	3	20.0

33.3% of speakers were inconsistent. F=3

These results provide further evidence that variation of palatalization occurs within native Arabic speakers in the Lebanese-Brazilian population. By comparing variation in the palatalization of words that appeared more than once in the text, certain words are found to be more consistently palatalized than others are. Such cases include '*sitio'*, which was palatalized 80% of the time, and *'artigos'* which was not palatalized 80% of the time. While these words share the same phonological environment

/ti/, there are contrary results concerning the presence of palatalization in the group. These results point toward non-phonological factors that affect variation and may suggest that both frequency and lexical diffusion may contribute to variability. In addition, it is noticed that when there were more opportunities for the same word to be palatalized, more inconsistency within the same speaker was observed, suggesting that token frequency may affect variation.

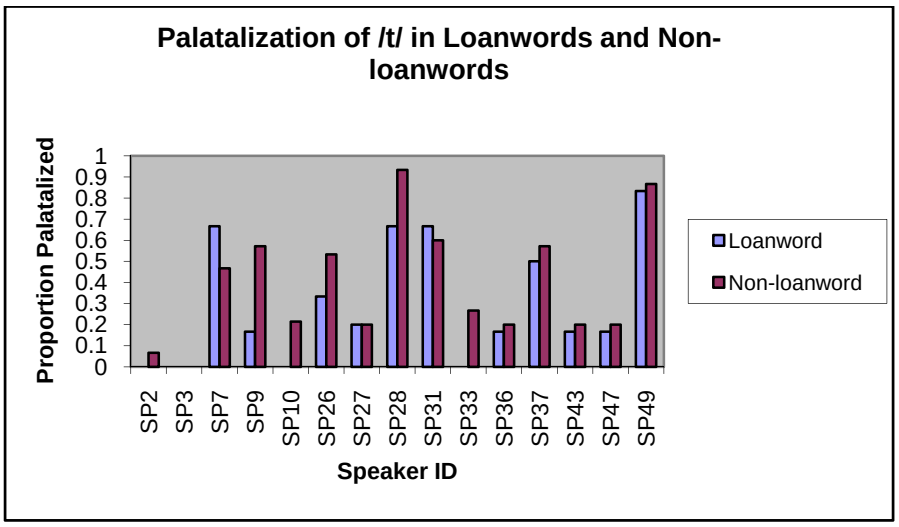
An interesting result is that with the word '*sitio*', twelve speakers consistently palatalized in both instances the word was produced. Among the speakers who palatalized were some who rarely palatalized overall, but did in this context, suggesting that palatalization is influenced by type frequency.

In summary, results indicate palatalization is variable in first-generation members of the Lebanese-Brazilian community. Variability of production occurs in an individual, both at the lexical level and phonemic level. This variation appears to be non-categorical caused by internal and external factors. Because first generation Lebanese-Brazilians have experience with both Arabic and Portuguese, the question arises of how elements of Brazilian phonology, specifically new acquired types of assimilation, appear in words Portuguese words that are of Arabic origin. In order to investigate inconsistency in the production of assimilation more fully, in addition to palatalization, other types of assimilation are examined, including vocalization and velarization.

In the Figures 4.6-4.8, results indicate that different rates of palatalization occur not only across speakers, but also in type of word. Loanwords undergo a different rate of palatalization than non-loanwords, suggesting that failure to produce palatalization in these types of words may be a type of language transfer from Arabic phonology.

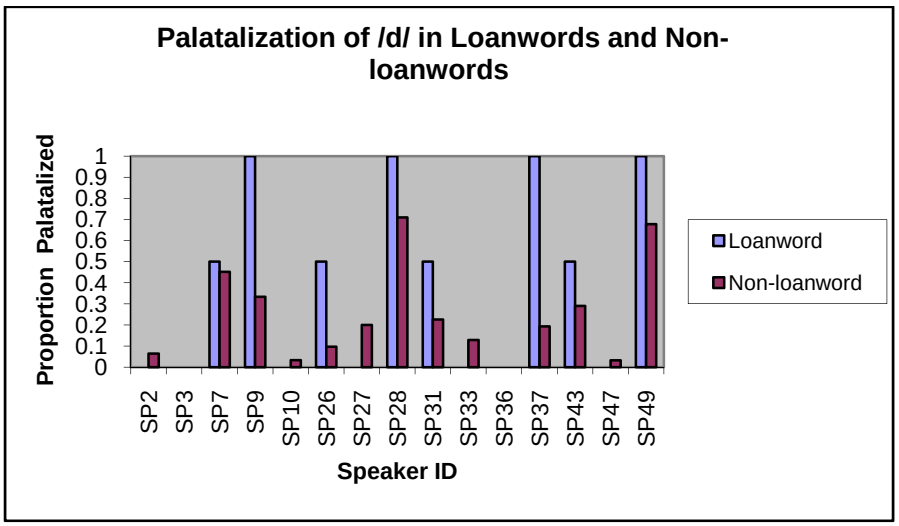
Variation in Palatalization: Loanwords vs. Non-loanwords

Figure 4.6: Palatalization of /t/: Loanwords vs. Non-loanwords



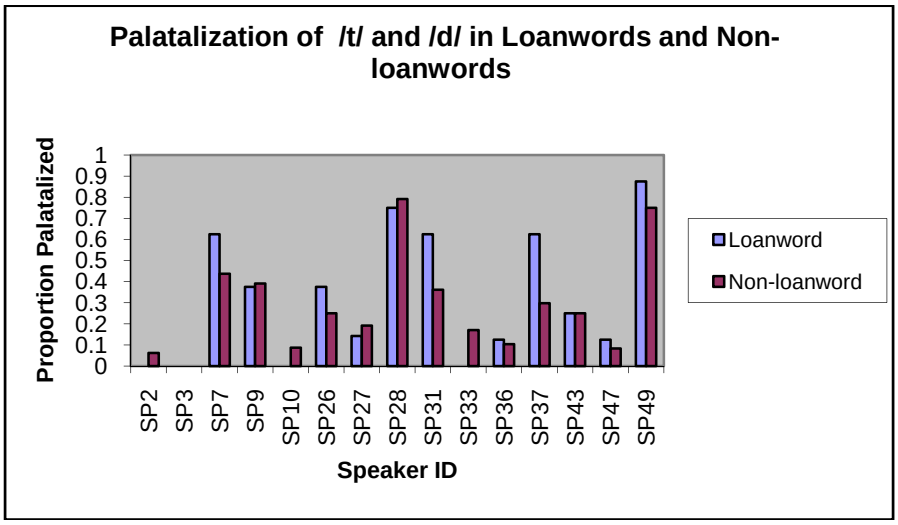
Token Frequency total:19
Loanwords: 6
Non-loanwords:13

Figure 4.7: Palatalization of /d/: Loanwords vs. Non-loanwords



Token Frequency total:35
Loanwords:2
Non-loanwords:33

Figure 4.8: Palatalization of /t/ and /d/: Loanwords vs. Non-loanwords



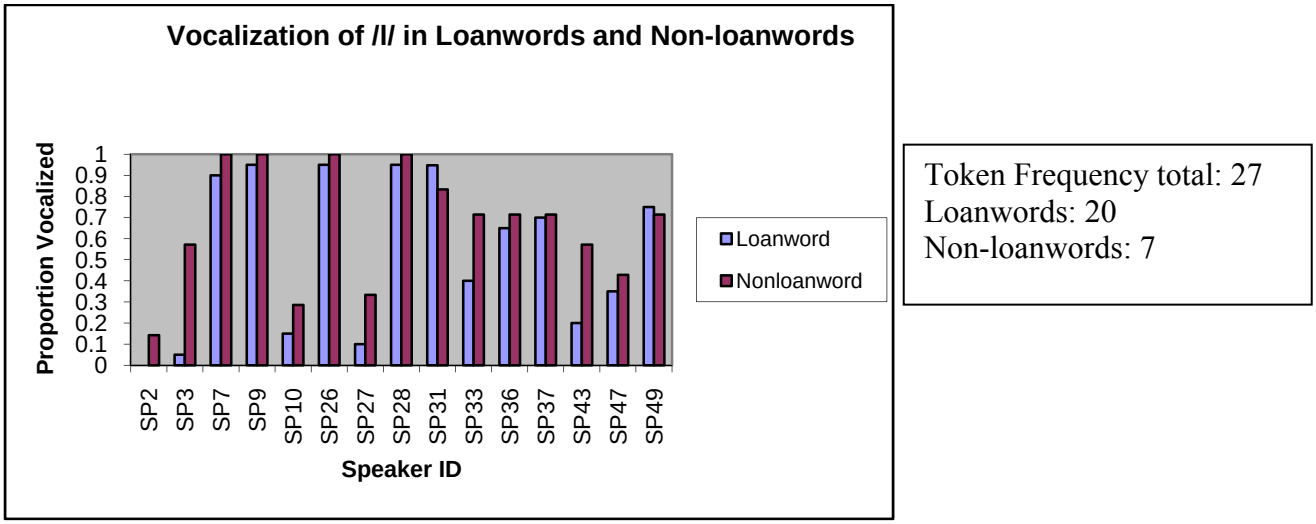
Data in Figures 4.6 and 4.7 indicate that overall, palatalization occurred in /t/ more so than /d/. In addition, palatalization occurred more frequently in words that were not loanwords than in loanwords of Arabic origin.

While palatalization could occur in /t/ and /d/, data in Figure 4.8 show to what extent subjects palatalized in both phonemes in Arabic loanwords and non-loanwords. If a population had experience with the Arabic language, /t/ is found more likely than /d/ to be palatalized in loanwords than non-loanwords. Considering overall palatalization of dental stops, there is no trend in that loanwords are palatalized less than non-loanwords.

4.3.2 Vocalization

Next, another type of assimilation, vocalization, is investigated. Vocalization is a phenomenon that occurs in Brazilian Portuguese, but not in Lebanese Arabic.

Figure 4.9: Vocalization of /l/: Loanwords vs. Non-loanwords



While there were some speakers who never palatalized according to the data presented in Figures 4.6 – 4.8, results differ in the production of vocalization in this population for both loanwords and non-loanwords. Results from Figure 4.9 reveal that all speakers surveyed vocalized at least once in both loanwords and non-loanwords.

Moreover, there is more evidence for variation in the individual. In some speakers such as SP 3, SP33, and SP43, there was a difference between vocalization in loanwords and non-loanwords, with non-loanwords being vocalized more than loanwords. These results are contrary to those in the production of palatalization in this population.

A case study of subject SP 33 reveals that individual variation occurs in the same phonological environment in both loanwords of Arabic origin and non-loanwords. In Table 4.28, four words containing /al/ in word final position are inconsistently produced.

In the two words that are Arabic loanwords, in both instances /al/ is vocalized, even when the word is not perceived as being of Arabic origin.

Table 4.28: Variability in Vocalization of Word Final /al/

IPA transcription	Portuguese word	Perceived as LW	Loanword
a.ɾi'aw	arraial	yes	yes
ẽ.ʃo.'vaw	enxoval	no	yes
mu.zi.'kaw	musical		no
es.pe.'si.al	especial		no

Table 4.29: Variability in Vocalization of Syllable Initial /al/

IPA transcription	Portuguese word	Perceived as LW	Loanword
al.'ku.ɲə	alcunha	yes	yes
aw.fi.'ne.tɪ	alfinete	no	yes
al.'deɪ.ə	aldeia	no	yes
aw.'guẽɪ̯	alguém	no	no

Table 4.30: Loanword Perception and Variation of Vocalization of /al/

IPA transcription	Portuguese word	Gloss	Perceived LW	Actual LW
al.ˈku.ɲə	alcunha	last name	yes	yes
al.go.ˈdãʊ̯	algodão	cotton	yes	yes
a.ɾiˈaw	arrial	fair	yes	yes
ˈbaw.dɪ	balde	recipient	no	yes
kã.ˈdiw	candil	candle	yes	yes
aw.fi.ˈne.tɪ	alfinete	clip	yes	yes
ẽ.ʃo.ˈvaw	enxoval	dry goods	no	yes
a.ˈvaw	aval	tax	no	yes
aw.ˈfã.de.gə	alfândega	customs	yes	yes
al.ˈmo.sə	almoça	eats lunch	no	no
al.ˈdeɪ.ə	aldeia	town	no	yes
a.ˈniw	anil	blue ring	yes	yes
es.pe.ˈsi.al	especial	special	no	no
a.le.ˈkɾĩ	alecrim	rosemary	yes	yes
al.ka.ˈpa.xə	alcaparra	capers	yes	yes
al.ˈmõ.de.gə	almôndega	meatball	no	yes
aw.ˈguẽɪ̯	alguém	someone	no	no
mu.zi.ˈkaw	musical	musical	no	no
kĩ.ˈtaw	quintal	yard	no	yes
vow.ˈto	voltou	returned	no	no
al.ko.ˈron	alcorão	Quran	no	yes
al.ˈfõ.bɾə	alfombra	red	yes	yes
es.pe.si.aw.ˈmẽ.tɪ	especialmente	especially	no	no
al.ˈʒe.ɾə	álgebra	algebra	yes	yes

Subject SP33 has a tendency not to vocalize in Arabic loanwords beginning with the prefix /al/, whether or not he perceives the word as a loanword. However, in Arabic loanwords where /al/ is in word final position, the subject is variable in his incorporation of vocalization, whether or not he perceives it as an Arabic loanword.

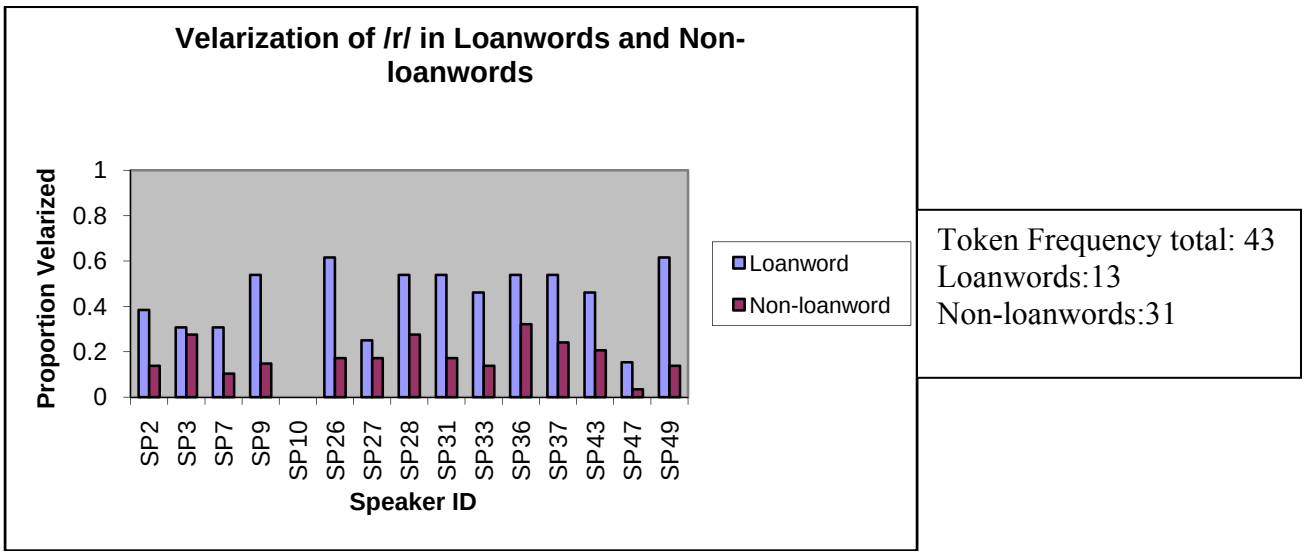
This subject is variable in his production of vocalization. In words that began with al-, regardless of perception of the word's origin, this subject tends not to vocalize when al- appears in word initial position. In Arabic and non-Arabic loanwords, this subject vocalizes. Because the speaker does not vocalize in word initial position, it could be that this speaker is maintaining the morphophonological meaning in Arabic by not vocalizing. There is some evidence for a relationship between perception and production of vocalization. In the case of this speaker, there is a more evidence of not producing the Brazilian Portuguese assimilation and maintaining the morphophonological relationship that exists in Arabic in retaining the /l/.

4.3.3 Velarization

Velarization of /r/ is considered in three phonological environments: word initial, intervocalic and syllable final position. When comparing the difference between velarization in both loanwords and non-loanwords in the scripted speech, this type of phonological adjustments is found to occur in loanwords of Arabic origin more than in other types of words in almost all cases, the exception being subject SP 10, as shown in Figure 4.10. There is an overall trend that words of Arabic origin are less likely to be velarized than words that are not of Arabic origin. This was not the case with the results

gathered from the data that looked at the same type of variation in palatalization and vocalization. Data presented in Tables 4.31-4.33 provide a closer analysis in the type of variability that occurs in the production of velarization in specified phonological environments.

Figure 4.10: Velarization of /r/ in Loanwords and Non-loanwords



In the tables below, data are provided addressing how variability occurs in different phonological environments. Each table presents a specific phonological environment in which velarization could occur. To obtain these results, IPA transcriptions were consulted for all speakers where word initial and intervocalic /r/ appeared in the text. Based on these transcriptions, each word was assigned a value, either 1 for velarization or 0 for not incorporating this type of assimilation.

Table 4.31: Variation in Non-Loanwords- Word Initial /r/

ID	resolver	reza	rápido	região	repente	% velarized
Gloss	'to decide'	'pray'	'fast'	'region'	'suddenly'	
SP2	0	1	1	0	1	60%
SP3	1	1	1	1	1	100%
SP7	0	0	1	1	0	40%
SP9	1	1	1	1	0	80%
SP10	0	0	0	0	0	0%
SP26	1	1	1	1	1	100%
SP27	1	1	1	0	1	80%
SP28	0	1	1	1	1	80%
SP31	0	1	1	1	1	80%
SP33	0	1	1	1	0	60%
SP36	1	1	1	1	1	100%
SP37	1	1	1	1	1	100%
SP43	0	1	1	0	1	60%
SP47	0	0	0	1	0	20%
SP49	1	1	0	1	1	80%
Total	7	12	12	11	10	69%

Table 4.32: Variation in Loanwords- Word Initial /r/

ID	roque	ramadã	% Velarized
Gloss	'rook'	'Ramadan'	
SP2	1	1	100%
SP3	1	0	50%
SP7	1	0	50%
SP9	1	1	100%
SP10	0	0	0%
SP26	1	1	100%
SP27		1	100%
SP28	1	0	50%
SP31	1	1	100%
SP33	1	0	50%
SP36	1	0	50%
SP37	0	1	50%
SP43	1	0	50%
SP47	0	0	0%
SP49	1	1	100%
Total	11	11	63%

Table 4.33: Variation in Loanwords- Intervocalic /r/

ID	arraial	arroba	alcaparra	garrafa	masmorra	guitarra	% velarized
Gloss	'fair'	'15 kgs.'	'caper'	'carafe'	'prison'	'guitar'	
SP2	0	1	1	1	0	1	67%
SP3	0	1	0	1	0	0	33%
SP7	0	0	1	1	1	0	50%
SP9	1	1	1	0	1	1	83%
SP10	0	0	0	0	0	0	0%
SP26	1	1	1	1	1	1	100%
SP27	0	1	0	1	0	0	33%
SP28	1	1	1	1	1	1	100%
SP31	0	1	1	1	1	1	83%
SP33	1	1	0	1	1	1	83%
SP36	1	1	1	1	1	1	100%
SP37	1	1	1	1	1	1	100%
SP43	0	1	1	1	1	1	83%
SP47	0	0	1	0	0	1	33%
SP49	1	1	1	1	1	1	100%
Total	7	12	11	12	10	11	70%

Table 4.34: Velarization of /r/- Summary of Variation

	Word Initial Non-Loanwords	Word Initial Loanwords	Intervocalic Loanwords	Total Average Velarization
SP2	60%	50%	67%	59%
SP3	100%	50%	33%	61%
SP7	40%	50%	50%	47%
SP9	80%	100%	83%	88%
SP10	0%	0%	0%	0%
SP26	100%	100%	100%	100%
SP27	80%	100%	33%	71%
SP28	80%	50%	100%	77%
SP31	80%	100%	83%	88%
SP33	60%	50%	83%	64%
SP36	100%	50%	100%	83%
SP37	100%	50%	100%	83%
SP43	60%	50%	83%	64%
SP47	20%	0%	33%	18%
SP49	80%	100%	100%	93%
Average	69%	60%	70%	66%

For some speakers, being an Arabic loanword was a factor that affected the incorporation of velarization, as exemplified in the speech of SP3 in syllable initial position. In all non-loanwords, this speaker consistently velarizes. However in loanwords, both word initially and intervocalically, this speaker is inconsistent in velarization.

4.4 VARIATION IN THE PERCEPTION AND PRODUCTION OF ARABIC LOANWORDS

In the first generation, is the perception of the origin of Arabic loanwords variable and does perception affect phonological variability in production?

To address this question, first, the issue of variability in loanword perception results is addressed. Next, the effect on perception on production is explored.

4.4.1 Loanword Perception

Arabic loanwords were integrated in a Portuguese text. Participants were asked to identify words that they believed were of Arabic origin. There was variability in the number and type of loanwords that were identified. Data relating to individual subjects appear in the appendices.

Appendix G contains the words that each of the subjects identified as being of Arabic origin. Appendix H shows the percent of correctly identified words identified by speakers.

Correct loanwords identification ranged from 77% to 8%. Variation in these results suggests that there are factors that affect the perception of these types of words. The effect of generational membership and correct loanword identification is explored in Table 4.35.

Table 4.35: Loanword Identification and Membership of a Generation

Generation	Mean
1	32%
2	35%
3	22%

Results indicate being a first, second or third-generation Lebanese Brazilian was not significant in correct loanword identification**, *F*(2, 37) = 1.78, *n.s.*** For Lebanese-Brazilian groups, the average correctly identified 31 %. In the first generation, this average was 32%, in the second generation, 35%, and in the third generation, 22%. There was not a significant difference between the first and second generation in loanword identification, however what is striking in these results is that second generation performed better than the first generation in this task. Loanword identification results differ from those presented in the situational use of Arabic and language ability in this second-generation population. The third generation did however perform at a lower rate than the first and second generations. High performers in this task that had no experience with Arabic were those that were college educated. Low performance in the third generation in all tasks has been consistent in the participants surveyed in this population.

Variability in the results of loanword perception may indicate that there is some relationship between being a member of a specific generation and performing this task. Language experience may be a factor that contributes to perception of loanword origin. Other factors however must contribute to variation in this perception task, since the first

and second generations performed almost the same, but had different language experiences with Arabic.

While there is not a significant relationship between being member of a generational group and correctly identifying the words, language experience does serve as a contributing factor in being successful in this task. Results from the T-test shown below indicate that there is a relationship between speaking Arabic and being successful in loanword identification.

df=38 F=3.72
$p<.05$

Since the ability to speak Arabic does contribute to a person's ability to identify loanwords correctly from Arabic, the question arises why second-generation speakers performed better on this task than first-generation participants. This question leads to inquiry about other factors that affect variation in the perception and production of Arabic loanwords.

Prior knowledge and some experience with the Arabic language are other factors that could influence how a subject perceives Arabic loanwords. Formal education, especially formal linguistic training in Portuguese, may have aided participants in successfully identifying Arabic loanwords. Using a Spearman Correlation, the relationship between education and loanword identification is investigated. Education is shown indeed to be related to correct loanword identification. Data contained in Table

4.36 illustrate that with more education, the percentage of correct identifications increased in most cases.

(Spearman $r = 0.45$, $p < .01$)

Table 4.36: The Effect of Education on Loanword Identification

Education Level	% Correct
Less than eighth grade	19%
Finished high school	12%
Some college	26%
College graduate	35%
Graduate school	40%

A summary of these results indicate that while the second generation may not have the language ability of the first generation, they do have experience with the language, which affects perception of these words as being of Arabic origin. A possible explanation for second generation performing better than the first generation on this task is that Arabic loanwords may have important cultural value for this second generation. In addition, members of the second generation were more educated in this study than in members of the first generation. Subjects with more education tended to perform better in the task involving the identification of words of Arabic origin. Education and experience with the language are two sociological factors that are confirmed to attribute to variation in the perception of loanwords of Arabic origin in all members of the study that were surveyed.

Another factor affecting loanword perception is the presence of non-lexical material from Arabic appearing in the loanword. When collecting data in the perception

task, the principal researcher reported that on more than once occasion subjects mentioned that words beginning with the sequence al- must be of Arabic origin. In order to explore whether the presence of the Arabic definite article affects perception, the Arabic loanwords used in the text are divided into three categories, those beginning with al-, a-, and those that do not al- or a-. The first column of Table 4.37 provides a range indicating the number of first, second and third generation Lebanese-Brazilians that correctly identified the loanword, in order to indicate the relationship of relative frequency in this population to correct loanword identification.

Table 4.37: Distribution of Correctly Identified Loanwords

Frequency	al-	a-	No al- or a-
35+			haquim haji haxixe mufti
30-34			ramadã quibe
25-29			Hasan hena Mecca
20-24	alfombra		jasmin mesquita sura
15-19	alambique alfandaga alfinete álgebra almôndega	azeite azeitona	elixir emir
10-14	alcaparra alcunha aldeia alecrim algodão	acelga azougue	masmorra xequemate
5-9		açougue adobe anil arraial arroba atum azar	caravana fulano mameluco mascate talco tambor tarifa xadrez xarope
1-4		aval	balde enxaqueca girafa guitarra marfim nuca quintal roque tarefa

Initially, it seems that morphological influence from Arabic, namely the presence of a- or al-, does not influence the selection of loanwords by these subjects. The most selected words, which were identified by 25 or more speakers, do not appear to contain this morphological trace of the definite article from Arabic. While the most selected words do not contain morphological material, semantic categories may be established after closer examination of these words. The most correctly identified Arabic loanwords were associated with popular culture as well as religion. In the middle tier of words identified, correctly identified by between 10 and 20 speakers, the majority of words are not only associated with Arab culture, but also contain the prefix al-. In the bottom tier of words, correctly identified between 1 and 9 times, none of the words contained the prefix al-. However in the words correctly identified by between 5 and 9 speakers, there is a grouping of words that contains a-. The words that were least likely to be identified as Arabic loanwords do not have the prefix al- and are words that are not associated with religion.

To summarize the results gathered from the Arabic loanword perception task, sociological and linguistic factors influence the perception of loanwords in this population. While certain groups performed better on this task, first generation membership was not the determining factor for having the best performance of this task. Education had more of an effect on the perception of Arabic loanwords in this population. Subjects with higher levels of education were more successful in this task than members that did not have as much education, regardless of membership in a particular generational group. In addition, the results show that semantic and

morphological factors also affect perception of Arabic loanwords in members of all generational groups.

4.4.2 Loanword Production

Phonetic transcriptions of the standardized text reveal that loanword production does vary in a population that has language experience with Arabic. As a way to test for differences in assimilation in Brazilian Portuguese, palatalization, vocalization and velarization were compared. In this section, results are provided of the ways that native speakers of Arabic changed Brazilian Portuguese pronunciation in order to reintroduce Arabic phonology. Examples are grouped into two categories, segmental and non-segmental adjustments, which are examples of renativization of loanword adaptations.

In Arabic, there are no restrictions for the types of sound that may appear in coda position. However in Portuguese, the phonemes /b/ /k/ /d/ /f/ /g/ /p/ /t/ and /v/ are not commonly occurring in coda position and typically an epenthetic vowel is added if a word ends in one of these sounds. Many words originating from Arabic have been incepted into Portuguese and have adjusted to phonological needs of the borrowing language orthographically. Often times, this has involved adding a vowel to follow the consonant. In examining the production of Arabic loanwords by speakers with Arabic language experience, primarily it is first-generation speakers that made adjustments to these words, and maintained original Arabic segmental phonology by not pronouncing this epenthetic sound. In the following examples, all of these loanwords that end in /ɪ/ are renativized by the speaker through the linguistic phenomenon of apocape.

Table 4.38: Segmental Renativization of Arabic Loanwords- Apocape

Speaker ID	Apocape-Word Final	Portuguese	Gloss
SP10	a.lã.'bik	*alambique*	recipient
SP10	al.fi.'net	*alfinete*	safety pin
SP10	a.'zeɪ̯t	*azeite*	oil
SP10	ʃa.'rɔp	*xarope*	syrup
SP10	'ʃɛ.k.'ma.tɪ	*xeque-mate*	check mate
SP10	xa.'ʃiʃ	*haxixe*	hash
SP10	a.'sug	*açougue*	butcher shop
SP47	a.'dʊb	*adobe*	adobe
SP49	'xaʒ	*haji*	pilgrimage
SP37	a.lã.'bik	*alambique*	recipient
SP3	a.'zeɪ̯t	*azeite*	oil

Observations: Examples in this table indicate that there is variability in both the same speaker and word. In the case of SP10, this speaker had a tendency at the end of the word not to produce the /ɪ/. In the case of the word 'ʃɛ.k.'ma.tɪ, this only occurs variably. In the examples of *azeite* and *alambique,* more than one subject is cited as not producing the epenthetic /ɪ/, thereby restoring it to the original Arabic phonology.

Non-segmental adjustments also occur in the renativization of loanwords by Lebanese Brazilians. Similarly, this is illustrated at the level of the individual as well as the word. Prosodic adjustments occur in more than one syllable position, as exemplified below.

Table 4.39: Non-segmental Renativization of Arabic Loanwords-Stress

Shift from penultimate to antepenultimate syllable

Speaker ID	IPA Transcription	Portuguese	Gloss
SP7	al.'ka.pa.xə	alcaparra	caper
SP7	'ʒi.xa.fə	girafa	giraffe
SP47	'al.fom.brə	alfombra	red
SP2	ma'ma.lu.ku	mameluco	servant

Table 4.40: Renativization of Loanwords- Non-segmental

Shift from antepenultimate to penultimate syllable

Speaker ID	IPA transcription	Portuguese word	Gloss
SP3	al.'ʒe.brə	álgebra	algebra
SP9	al.mõ.'de.kə	almôndega	meatball

In summary, Brazilian Portuguese speakers who have experience with Arabic make both segmental and non-segmental adjustments in the production of loanwords of Arabic origin. These results are consistent with the type of variability that resulted from Arabic language transfer on Portuguese. In both spontaneous and scripted speech, phonological variation of Brazilian Portuguese included Arabic language transfer both at the segmental and non-segmental level in groups, individuals, in certain types of words and sound patterns.

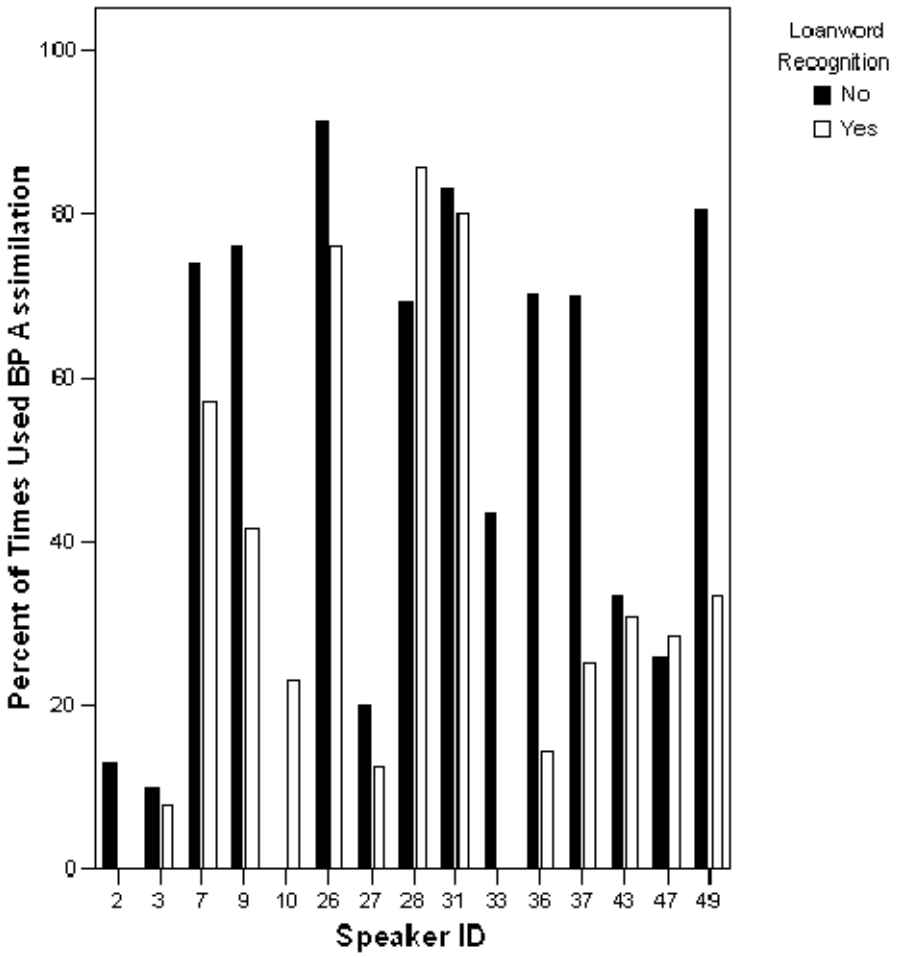
The final task in examining loanword production is to investigate whether perception affects production consistently first-generation Lebanese-Brazilians. This will be done in two ways. First, all of the times that a subject could have the opportunity to assimilate with palatalization, vocalization or velarization will be considered. Then overall assimilation will be compared in two cases: in words that the speaker identifies

as a loanword, and in all other words. The hypothesis is that if the loanword is perceived as being of Arabic origin, then the word is susceptible to incorporate both elements of Lebanese Arabic and Brazilian Portuguese phonology.

4.4.3 The Effect of Perception on Production

Data appearing in Figure 4.11 display the relationship between loanword perception and production for each individual in the first generation in considering the three types of Brazilian Portuguese assimilation explored in this study.

Figure 4.11: Assimilation- Loanword Perception and Production



1. When comparing the percentage of usage, the amount of variation in assimilation produced in an individual is measured. The overall assimilation that was analyzed which included palatalization, velarization and vocalization, varied among individuals in the first generation.

2. By looking at the high amount of variation in percentage of usage, it is evident that loanword perception has an impact on production of assimilation in Brazilian Portuguese in the first generation. In the results of all but one participant, loanword recognition affects production of assimilation.

3. By looking at the degree of variation, it is apparent that assimilation occurred more in a certain type of word, in this case Arabic loanwords and non-Arabic loanwords. Assimilation occurred more in non-loanwords that in loanwords in first-generation Lebanese Brazilians.

Variation in the production of Brazilian Portuguese assimilation occurred in loanwords and non-loanwords. Rates of assimilation differed in individuals as well as between generational groups. In some cases, assimilation in both Arabic and Portuguese is found to be related to recognition of the word being from Arabic origin. These types of results are also reflected in the way that words of Arabic origin incorporated Arabic phonology, as illustrated in the examples of apocape and change of accentuation.

In closing, no categorical evidence is provided about the relationship between perception and loanword production. While some results indicate that words of Arabic origin are produced differently from words that are not loanwords, other results contradict these findings. This is best illustrated with an example from IPA transcriptions. In Table 4.41, evidence is provided that the Arabic loanword *alfinete* and word of non-Arabic origin, *presente* reveal that /tɪ/ is produced variably among members of the same group. While not one speaker produces the word in the same way, each individual is consistent in the articulation of palatalization, both in the loanword and the non-loanword. Inconsistent results are found in the production of vocalization of /al/. Three out of four speakers do not vocalize /al/ in the word *alfinete,* while multiple degrees of variation exist in the way palatalization is incorporated by these speakers.

There are some discrepancies observed when comparing results of this example to overall results presented in Chapter Four involving the incorporation of these three types of assimilation in first-generation Lebanese Brazilians. Overall, in the three types of assimilation studied, vocalization was the type of assimilation that was most prevalent. However, in this example provided, palatalization is more widespread and possesses greater degrees of variability among subjects. Data in Table 4.41 provide evidence that vocalization occurs more than palatalization depending on the word and the speaker. In this case, the word is a loanword originating from Arabic. A possible reason why assimilation occurs in /t/ but not in /l/ is that the segment /al/ may still be morphologically and phonologically significant for the native Arabic speaker.

Table 4.41: Gradualness in Palatalization

ID	presente	alfinete
SP2	pɾe.'zẽ.tɪ	al.fi.'ne.tɪ
SP7	pɾe.'zẽ.tʃɪ	al.fi.'ne.tʃɪ
SP10	pɾe.'zẽt	al.fi.'net
SP37	pɾe.'zẽtʃ	aw.fi.'ne.tʃ

Results from this example summarize what this study has aimed to address. In speakers who have experience with the language from which the loanword originates, both trends and inconsistencies can be noticed in groups and individuals regarding phonological variation and language transfer. While assimilation has been viewed diachronically as a categorical process that can be ordered by rules, synchronic analysis

of the production of loanwords points to non-predictable gradual change occurring in an individual, which is not rule based.

With regards to loanword recognition, examples in Table 4.42 list the subjects who identified *alfinete* as an Arabic loanword and show how they produce this word. Regardless of all speakers identifying this word as being of Arabic origin, original Arabic phonology is not retained since vocalization occurs. Following this table is the combination of the different ways that all first-generation Lebanese Brazilians produced this word with regards to incorporating palatalization and vocalization.

Table 4.42: Loanword Recognition and Variability- '*alfinete*'

SP26	aw.fi.'ne.tɪ
SP27	aw.fai.'net
SP28	aw.fi.'ne.tʃɪ
SP31	aw.fi.'ne.tʃɪ
SP47	aw.fi.'ne.tʃɪ

Vocalizes and palatalizes

SP28	aw.fi.'ne.tʃɪ
SP31	aw.fi.'ne.tʃɪ
SP47	aw.fi.'ne.tʃɪ
SP49	aw.fi.'ne.tʃɪ
SP37	aw.fi.'ne.tʃ
SP10	aw.fi.'ne.tʃ

Neither vocalizes not palatalizes

SP43	al.fi.'ne.tɪ
SP33	al.fi.'ne.tɪ
SP9	al.fi.'ne.tɪ
SP2	al.fi.'ne.tɪ
SP3	al.fi.'ne.tɪ

Vocalizes but does not palatalize

SP26	aw.fi.'ne.tɪ
SP36	aw.fi.'ne.tɪ
SP27	aw.fai.'net

Palatalizes but does not vocalize

SP7	al.fi.'ne.tʃɪ

Table 4.43: Variability in Assimilation

	+Vocalization	-Vocalization
+Palatalization	6	1
-Palatalization	3	5

In summary, two types of Brazilian Portuguese assimilation are possible in this example, /t/ is capable of undergoing palatalization and /l/ is capable of being vocalized. Of all of the subjects that perceived *alfinete* as being of Arabic origin, no one refrained

from incorporating Brazilian Portuguese assimilation even though the phenomenon does not occur in Arabic phonology. This example shows that even though a speaker may have linguistic knowledge from which the language that the loanword originates, phonological elements of the non-native language may be implemented variably.

Results of this study relate linguistic acquisition of a NNL to maintenance of L1. In the case of language contact, there are multiple factors that affect awareness of perception yielding different rates of variability in individual production. One of these factors is perceptual awareness in both languages. While sociological and linguistic factors can affect variation in one language, when languages come into contact, it is found that variability is not predictable namely because of experiences relative to the individual which affect perception. This concept is best reflected in a short commentary provided by SP 2, a first-generation native speaker of Arabic, who participated in this study.

English translation:

I don't mix up Portuguese. I speak normal Arabic without mixing up the words. I am able to speak Portuguese without mixing Arabic together if it is necessary to talk. I don't mix the word one language with the other. I am able to dominate both languages without any problem.

Portuguese trancription:

Eu não misturo em português. Eu consigo falar árabe normal sem errar as palavras. Eu consigo falar em português sem misturar árabe juntos se precisa falar. Não misturo as palavra uma língua com a outra. Consigo dominar as duas sem problema nenhuma.

This metalinguistic commentary is telling on several levels. First, it shows that the subject is conscious that members of her community exhibit language transfer in the form of lexical code-switching. Next, it exemplifies that the subject identifies herself as a member of the community that is not influenced by Arabic language transfer when producing Brazilian Portuguese. Ironically, in this commentary, despite the content of her words, there is evidence for phonological, syntactic and morphological transfer of the Arabic language in this short sample of discourse from the speaker. While mixing of codes in this case is not on a lexical level, Arabic language transfer does permeate the production of Brazilian Portuguese contrary to what is believed to be linguistic awareness. Observations made in this example mirror variation found in this subject in other types of discourse highlighted in the study, as well as in other first generation Lebanese-Brazilian who were analyzed in Chapter Four.

5. CONCLUSION

This research explores inconsistencies involving language change and variation synchronically while examining loanword adaptations. In a sociolinguistic study that examines language maintenance and variability of Lebanese Brazilians, non-categorical, phonological variation mirrors irregularities that can be observed in words that have been borrowed from Arabic into Portuguese diachronically.

5.1 HOW THIS STUDY RELATES TO OTHERS

Both diachronic and synchronic contacts have been shown to incorporate redundant, non-lexical material across language. Findings in the present study confirm (Mattos e Silva 2004) that language change and variation is triggered by contact. With a study that involves native speakers of Arabic and Arabic loanwords, some observations may be made with regards to production and language change by examining perception, redundancy, and frequency as possible factors that affect variation in the production of Brazilian Portuguese.

Results from this study show that language contact triggers gradual, phonological variation. In non-native speakers of Brazilian Portuguese whose first language is Lebanese Arabic, this is reflected through the acquisition of certain phonological phenomena from Portuguese as well as in the maintenance of such material from Arabic.

Findings from this study reveal that through the use of a Portuguese text containing Arabic loanwords, a platform exists to examine a relationship between phonological awareness and production when two languages are in contact. Because language transfer from Arabic occurs not only in the loanword, but also in the surrounding text, there is evidence confirming that perceptual similarity is integrated into the production grammar where loan processes tend to maximize the perceptual similarity between the adapted form and the foreign output, as (Miao 2005) proposed. In two types of discourse, both spontaneous and scripted speech, L1 grammar knowledge exists and is reflected in production.

Relating other findings, such as word frequency to the perception of non-native phonotactics in loanword adaptations (Davidson 2007), even though in the control group subjects had no knowledge of Arabic, there is evidence for knowledge of the original phonology of words. Consider the case of Arabic loanwords beginning with <h> in the control group. There was variation in both perception and production for words such as *haxixe* and *haji*. While the role of phonetic knowledge in phonological patterning has also been applied to examine external factors that have been noted to bias studies not taking these factors into consideration (Zuraw 2007), in the current study, phonetic knowledge is shown to differ from knowledge of a language when considering the production of loanwords. There is evidence for maintaining or incorporating non-native phonotactics and as well segmental material from the lending language, even when the person does not have knowledge of the language and does not recognize the word to be

from a specific origin. Frequency may play a role in the way the word is perceived or recognized and how it is reproduced in spoken form.

An exemplar model of phonology assumes that predictable and redundant phonetic properties are specified in the lexical representation while each contextual variant of a phoneme forms a separate phonetic category (Kang 2008). In the results of the present study, there is evidence for redundant material; however, it was neither shown to be categorical nor redundant. Within the same lexical item, there was proof for variation in the phonological environment. This last detail adds further evidence to the gradual and non-categorical nature of language change, as (Bybee 2002) suggests.

5.2 How the Research Questions were Addressed

5.1.1 RQ 1 Is there variation in the usage of Arabic within the Lebanese-Brazilian community in São Paulo?

Sociological factors are found to affect maintenance and usage of Arabic in São Paulo. Language usage depends upon the type of situation and is affected by need and preference. The level of Arabic proficiency is constant across generational groups, with speaking and understanding being more prevalent than reading and writing. Usage of Arabic varies in native and heritage speakers, with evidence of gradual disuse in third-generation Lebanese Brazilians.

Sociological Factors Affecting Maintenance

Sociological, economic, political and religious factors were confirmed to affect maintenance and usage of Arabic in the Lebanese-Brazilian community of São Paulo. The overarching factor that affected language usage in this population was whether or not an individual was born in Lebanon. Second and third-generation immigrants were less likely to maintain and use the language than first-generation immigrants were.

Arabic language usage varied depending on the situation. Arabic was more likely to be used in face-to-face situations rather than in telephone or writing. No substantial conclusions were made between being male or female and using the language. However, the language is maintained and used more in subjects over 45 who are college graduates than subjects who are under this age and have a lower level of education.

The abilities to speak and to understand spoken Arabic were the ways in which the language was most frequently used across all generations. Gradual disuse was evident in the second and third generation, with third-generation speakers reporting not being able to read or write in Arabic.

The majority of subjects who reported being able to speak Arabic, also reported to have knowledge of another language. First-generation speakers generally reported more experience with French than second or third-generation speakers. In the scripted speech sample, there are some examples of how different subjects had some French language transfer in their production of Portuguese. Examples of denasalization and palatalization

of high vowels are two different ways in which French affects pronunciation of some Portuguese words and are found in the tables below.

Table 5.1: Renativization of Loanwords - Denasalization

Speaker ID	Denasalization	Portuguese	Gloss
SP2	a.li.men.ta.'son	*alimentação*	food
SP10	al.go.'don	*algodão*	cotton

Observations: In syllable final position, these words are denasalized. Also noteworthy is the fact that these speakers did not vocalize the /l/ in word initial syllable in coda position.

Table 5.2: Renativization of Loanwords – Palatalization

Speaker ID	Palatalization high vowels	Portuguese word	Gloss
SP3	per.'fyu.mɪ	*perfume*	perfume
SP7	e.'myur	*emir*	emir

Observations: With palatalization of a high front vowel occurring in these examples, the pronunciation is similar to that of French, and not similar to Arabic or Portuguese.

5.1.2 RQ 2 In first-generation Lebanese Brazilians, is there evidence for phonological variability in the production of Brazilian Portuguese, and does this extend to words of Arabic origin?

In two types of speech samples, spontaneous discourse and a standardized text, there is evidence for language transfer from Arabic. Although the text was designed to test for phonological variation, language transfer occurred beyond the realm of phonology. While this type of transfer may be expected in spontaneous speech and was observed across subjects in this study in different degrees, this result was not expected to occur in the reading. Results indicate that maintenance of Lebanese Arabic affects production of Brazilian Portuguese on a morphological, syntactic and phonological level.

In the pilot study, first-generation Lebanese Brazilians were found to produce Brazilian Portuguese more variably than second and third generation Lebanese-Brazilian and Brazilians who had no affiliation with Lebanon and the Arabic language. This included loanwords of Arabic origin. In the final procedure, variation was further observed in first-generation Lebanese Brazilians in all participants surveyed. When three types of phonological variables were tested, inconsistencies were found more than once in the production of the same word by a single individual. Results indicate that in some cases, being a loanword had an impact on the production of one of the three types of assimilation, but in some individuals, it did not. With inconsistencies occurring in the

same lexical item that appeared more than once in the text, evidence is provided that variability is affected by other factors outside of the lexical and phonological realm.

5.1.2 RQ 3 In the first generation, is the perception of the origin of Arabic loanwords variable and does perception affect phonological variability in production?

There is evidence for both trends and inconsistencies in both the perception and production of loanwords. Overall, in the perception of loanwords, two factors that influence perception are education and knowledge of the Arabic language.

In those people that had no connection with Arabic, there is evidence for variation in the way that loanwords were produced. In some cases in the study, there is no evidence for a relationship between perception of word origin and production. In other examples provided, production can be related to perception when subjects reverted to the Arabic phonology. Perception of Arabic word origin affected the implementation of Brazilian Portuguese assimilation, however even with these results, variation exists at an individual level.

5.3 STRENGTHS AND WEAKNESSES OF THE STUDY

Perhaps this study's greatest strength was the variety of ways in which data were analyzed in order to provide evidence about variability in language contact. Additionally, the relationship between both linguistic and non-linguistic variables was thoroughly investigated through quantitative and qualitative analyses.

Case studies took into account the gradual nature of change and variation. Providing complete transcriptions was crucial in this data analysis, because it allowed the researcher and future researchers to have complete access to the contexts in which variation occurred. In this way, subtle variation that might have otherwise gone overlooked was addressed, thereby providing a more complete analysis.

Statistical analyses were used to test each research question and strengthened the credibility of the study. In the analysis of variation of Brazilian Portuguese assimilation, while individuals and groups were analyzed using binary features, analysis of a specific word or phonological environment provided a more in depth look at the nature of the degree of variation that was present. Statistical analyses were critical in the research, showing trends and inconsistencies both in individuals and between groups, however case studies were an integral part of the analysis.

It must be reiterated that this study was the first of its kind addressing these two languages and loanword adaptations. After some reflection about the results, the researcher acknowledges that there were some items that could have been improved upon. These observations may be helpful in preparing for future studies. In examining variability of assimilation in loanwords, more tokens were needed for the proper analysis of /d/. The small sample presented does not provide enough evidence for a conclusion about variability of this type of assimilation in loanwords. Inclusion of another sample of speech that included the loanwords in question would have made the analysis stronger. An effective way in which to do this would be to compare the elicitation of loanwords to

the production of loanwords in the text. After the subjects identified the words in the text and then read the text, another task involving the subjects reading a list of loanwords would be a way to test consistency of the production of loanwords across contexts. While the loanword *alfinete* provided an opportunity for analysis of more than one type of Brazilian Portuguese assimilation, a stronger conclusion may have been made if data from a non-loanword were also present. A word such as *alternante*, meaning 'alternate', would have been a logical choice since the opportunities for both palatalization and vocalization in the same phonological environment as *alfinete* are possible in this word.

5.4 FUTURE RESEARCH

Findings from this study provide justification for future research not only between these two languages, but also between languages that have undergone sustained contact. The study in its entirety- or certain aspects of the study- provides a framework for the examination of how linguistic and non-linguistic elements affect the variability of the individual in contact and especially loanword adaptations.

5.3.1 Arabic and Portuguese

For the purposes of continuity, language contact between two specific dialects of Portuguese and Arabic were chosen. Within the realm of these two dialects, this research opens the door to examine several aspects of the acquisition of Portuguese as a non-native language.

Variability was found in the production of specified types of assimilation, palatalization, velarization, and vocalization. Contact between these two warrants examination of other areas, especially between morphophonological elements in contact.

Acoustical, phonetic analysis could be used to examine gradualness in a variety of phenomena that differ between languages within the realm of perception and production. In Brazilian Portuguese, the verb *poder* 'can', inflected in the third person singular, differs in the present tense /pɔ.dɪ/ and past tense /po.dɪ /. Because there are no open vowels in Arabic, future research may examine the link between perception and production of metaphony in verbs and in other situations, such as irregular pluralization of nouns.

In further examining loanwords of Arabic origin and using acoustic analysis, it may be researched whether compensatory lengthening occurs in loanwords that retain the Arabic definite article. In addition, it could be studied whether emphatic consonants from Arabic are retained when producing Brazilian Portuguese, and if this occurs in loanwords as well as non-loanwords. With regards to vocalization, which was highlighted in this research, future studies may examine whether there is there a difference between the production of /au/, /al/ and /aw/ and whether this difference is perceived.

The relationship between phonology and other linguistic areas such as syntax and morphology, still has much to be explored in the intersection of these two varieties of language. Grammatical adjustments made in different types of discourse in this study should be considered in future research, particularly the genitive Idaafa construction from Arabic, which is a string of two nouns. Evidence from this study showed that speakers omitted prepositions and made morphological changes when reading a text, which reflected Arabic and not Portuguese grammar.

Future studies may also examine other dialects and make comparisons with these results. For example, in this research, Lebanese Brazilians were examined; to a lesser degree there has been a Syrian migration to Brazil, specifically in São Paulo (Knowlton 1955), which could be studied in the same context.

The same research design could also be applied for a study of contact between the two languages in Lebanon in the Bekaa Valley, which has been documented as having Brazilian influence (Sarruf 2005). Factors such as language maintenance of Portuguese and language transfer of Arabic in Portuguese could also be analyzed. While words of Portuguese origin have not entered the Arabic language to the extent that Arabic loanwords have entered Portuguese, lexical code-switching of Arabic and Portuguese, phonological variation language usage and language maintenance are all factors that could be examined in this community.

Other contact situations to be researched include the tri-border area of Brazil, Paraguay and Argentina, where many Arabic speaking immigrants have communities, especially in the area of Foz de Iguaçu (Murphy 2006). Because of the possible language contact between three languages, Arabic, Portuguese and Spanish, many research questions from this study could be applied in this area, the research questions that deal with loanwords, particularly since Arabic has also had extensive contact with Spanish.

Another potential study involves recently arrived Arabic speaking refugees in Brazil. There are reports of Palestinian refugees who learned Portuguese in refugee camps in the Middle East before being relocated in Brazil (Natali 2008) however, no linguistic studies have been published. This community would serve as an important focus group to investigate having prior exposure to Portuguese with formal instruction before coming to Brazil. These refugees could be compared to other immigrants

linguistically by examining language maintenance, acquisition and phonological variation.

5.3.2 Language Contact

The premise of this research can be applied to at least two languages that have been in contact. If the languages have been in contact over time, the production of loanwords that have been incepted diachronically is a pertinent area of study. The language maintenance and usage part of the study can also be applied to any two languages that have been in contact with at least three generations of separation. Additionally, variability in non-native speakers in the production of loanwords can be tested in groups that have no history of contact in the language, and the model used for testing variability in the acquisition of phonological elements could be applied.

Portuguese has been in contact with many languages over time. In the control group, the speaker who did not palatalize was a second- generation Italian. Because São Paulo is an area that has undergone extensive immigration, especially Japanese and Italian, it would be of interest to investigate variability in Brazilian Portuguese speakers of other languages and their descendents that speak Brazilian Portuguese.

With regards to loanword adaptations, perhaps the language that Portuguese currently is borrowing the most loanwords is from English. Words from English that have entered the Portuguese lexicon include specific categories of words dealing with technology, science, popular culture, names of people, brand names and appliances, to

mention a few. An application of this study could be to examine how native speakers of Portuguese pronounce English loanwords and to compare variability of the pronunciation of these words. This idea may further be researched by citing variation in the production of these words depending on whether these subject is when speaking English or Portuguese in various forms of discourse.

Appendix A: IPA Representations of Arabic Sounds (Jubran 2004)

FUNCTIONS OF THE NASAL AND ORAL CAVITIES		ORAL							NASAL
Mode of Articulation		Stops		Approximates				Glides	Nasals
				Fricative		Trill	Lateral		
	Vocal Chord Functions	Voiceless	Voiced	Voiceless	Voiced	Voiced		Voiced	Voiced
Articulatory Zone	Bilabial		**b** ب						**m** م
	Labiodentals			**f** ف					
	*Dental:	**t** ت ṭ ط	**d** د ḍ ض						
	*Interdental:	**θ** ث	ð ذ ð̷ ظ						
	*Alveolar			**s** س ṣ ص	**z** ز	**r** ر	**l** ل ɬ ɬ̠		**n** ن
	Palatal			ʃ ش	ʒ ج			**j** ي	
	Velar	**k** ك		**x** خ	ɣ غ			**w** و	
	Uvular	**q** ق							
	Pharyngeal			ḥ ح	ʕ ع				
	Laryngeal	ʔ ء		**h** ه					

Appendix B: Survey

Qual sua idade? 18 ou menos19 -25 26-35 36-45 46-55 56-64 65 ou mais

Qual seu grau de escolaridade?

Ensino Fundamental
Ensino Médio
Superior Incompleto
Superior Completo
Pós-graduação

Sexo:

Masculino
Feminino

Onde você nasceu?

Brasil
Líbano
Outros

Qual seu grau de parentesco com o Líbano?

Eu nasci
Meu pai nasceu
Minha mãe nasceu
Minha avó nasceu
Meu avô nasceu
Minha bisavó nasceu
Meu bisavô nasceu

Marque quanto você usa o árabe nas seguintes situações:

Na escola--Nunca As vezes Sempre
Em casa--Nunca As vezes Sempre
No trabalho--Nunca As vezes Sempre
Nas práticas religiosas—Nunca As vezes Sempre
Com os amigos--Nunca As vezes Sempre
E-mail--Nunca As vezes Sempre
No telefone--Nunca As vezes Sempre

Marque as opções a respeito de cada língua:

Árabe—Falo Leio Escrevo Entendo
Português—Falo Leio Escrevo Entendo
Francês--Falo Leio Escrevo Entendo
Inglês--Falo Leio Escrevo Entendo
Outra--Falo Leio Escrevo Entendo

Quando você está conversando com alguém que fala português e árabe, qual língua você prefere usar?

Somente árabe
Somente português
Árabe e português

English Translation of Survey

What is your age?

18 or less, 19-25, 26-35, 36-45, 46-55, 56-64, 65 or more

What is your level of schooling?

Below 8th grade
High School
Some College
Completed College
Graduate School

Sex:

Male
Female

Where were you born?

Brazil
Lebanon
Other

What is your relationship to Lebanon?

I was born there
My father was born there
My mother was born there
My grandmother was born there
My grandfather was born there
My great grandmother was born there
My great grandfather was born there

Indicate when you use Arabic in the following situations:

At School- Never Sometimes Always
At home- Never Sometimes Always
At work- Never Sometimes Always
In religious services-Never Sometimes Always
With friends-Never Sometimes Always
Email-Never Sometimes Always
On the telephone-Never Sometimes Always

Mark the options to indicate your ability with language

Arabic
Speak Read Write Understand
Portuguese
Speak Read Write Understand
French
Speak Read Write Understand
English
Speak Read Write Understand
Other
Speak Read Write Understand

When you speak with someone that speaks Portuguese and Arabic, which language do you prefer to use?

Only Arabic
Only Portuguese
Arabic and Portuguese

Appendix C: Standardized Text with Arabic Loanwords

O mascate João, cuja alcunha é João Emir, é um mameluco. Por causa da sua profissão, usa uma blusa de algodão e visita cada arraial de sua região para vender artigos diversos: balde, panela, sabão, talco, perfume, hena, chapéu, candil, livros, cachaça de alambique, tecido, alfinete e outros muitos artigos de enxoval. Toda vez que João viaja para outros países da América Latina para vender seus produtos, precisa conseguir o aval da alfândega pagando uma tarifa. Todos os dias João almoça na casa de sua mãe, Dona Neusa. A casa dela é de adobe e fica em uma aldeia que se chama Céu Anil, perto de onde ele mora. João costuma ir para o açougue cada quarta-feira para comprar uma arroba de boi. Hoje, por ser seu aniversário, foi um dia especial. Dona Neusa lhe deu como presente uma pequena girafa de marfim, a qual ela comprou em um leilão. Também fez sua comida predileta, acelga com azeite, frango com alecrim, atum com molho de alcaparra, cuscuz de mandioca com azeitona, e um chá de jasmim com xarope de morango. Mais tarde, nesse mesmo dia, João saiu com seus amigos para comemorar num bar que fica em um sítio. Além de ter tomado uma garrafa de cerveja, comeu quibe de tira-gosto e almôndega com uma fatia de queijo por cima. Todos se divertiram muito jogando xadrez na festa. De repente, em uma grande jogada, alguém pegou o roque e gritou xeque-mate. Havia um show de um grupo musical que tocava no quintal do sítio, com guitarra e tambor. Durante a música. João contou uma história sobre um certo fulano que teve um grande azar na vida: foi pego com haxixe e foi mandado para uma espécie de masmorra, onde ficou preso por três anos. Quando a musica terminou, João voltou para a casa com o seu irmão, Hasan que é bem diferente dele. Todos os dias Hasan vai na caravana para a mesquita, onde o mufti lê a sura do alcorão. Durante o mês do ramadã, não come durante o dia e reza na alfombra. Hasan pensa em ir em poucos anos para Mecca para fazer a haji. O irmão de João gosta muito de estudar, especialmente álgebra. Ele gosta de resolver a tarefa matemáticas no quadro de giz para mostrar para os colegas a sua habilidade com os números. Devido as extravagâncias que cometeu no dia de seu aniversário, João amanheceu com enxaqueca. Para melhorar, ele colocou gelo na nuca, tomou um elixir que o haquim lhe sugeriu e usou termômetro com azougue para certificar-se de que sua temperatura estava boa. Dessa vez, esse mal-estar de João passou rápido, mas ele prometeu nunca mais exagerar na alimentação e na bebida.

English Translation:

João the peddler, whose nickname is Joao Emir, is of Arab descent. Due to the nature of his profession, he wears a cotton shirt and visits all of the different fairs of his region to sell his wares: bowls, pans, soap, talcum powder, henna, hats, candles, books, homebrewed liquor, paperclips and a lot of different articles for the home. Every time that Joao travels to different Latin American countries, he has to pay the customs tax. Every day Joao eats lunch at his mother's house who is named, Dona Neusa,. Her house is made of adobe and lives in a neighborhood called The Blue Ring, close to where he lives. Joao usually goes to the grocery store each week to get the same amount of meat. Today being his birthday was a special day. Miss Neusa gave him a little present, a giraffe that she bought at an auction. She also made his favorite meal, chard with olive oil, chicken with basil, tuna with caper sauce, cuscus with olives, and a jasmine tea. Later that same day, Joao went out with his friends to celebrate in a bar that is in a private locale. In addition to drinking a bottle of beer, he ate quibe and meatballs covered with cheese as an appetizer. Everyone had a really good time playing chess at the party. Suddenly during a really great game, someone yelled check-mate. There was a musical performance that played in the yard of the club that had a guitar and a drum. During the music, Joao told a story about this certain guy that has some pretty bad luck in his life. He was caught with drugs and was sent to prison for three years. When the music was over Joao went back home with his brother Hasan, who is really different than he is. Every day Hasan goes with a group to the mosque where the cleric reads the verses from the Holy Book. During the month of Ramadan, he doesn't eat during the day and prays on the prayer rug. Hasan is planning on going to the holy city of Mecca in a few years to make a pilgrimage. Joao's brother likes to study, especially algebra. He likes to solve math problems on the chalkboard to show his friends how good he is with numbers. Because of how Joao overdid it at his party, he woke up the next day with a headache. In order to get better, he put ice on the back of his neck and took a concoction that the medicine man made for him. This time, Joao's bad state passed pretty fast, but he promised to never again to exaggerate with food and drink.

Appendix D: Standardized Text IPA Transcriptions

First Generation- SP2

[o.mas.ˈka.tɪ.ʒʊ.ãu̯ˈku.ʒə.al.gʊ.ˈɛ.ʒo.ˈãu̯.e.ˈmiɾ.ˈɛ.ˈu.mə.
ma.ˈma.lu.kʊ.ˈpor.ˈkaw.zə.ˈda.ˈseu.pro.fi.ˈsãu̯.ˈu.zə.ˈũ.mə.
ˈblu.zə.ˈdɪ.al.gõ.ˈdãu̯.ˈɪ.a.vis.tə.ˈka.də.a.ɾɪaw.ˈdə.ˈsu.ə.
he.ˈʒiãu̯ .ˈpa.ɾə.vẽ.ˈdeɾ.aɾ.ˈti.gʊz.di.ˈveɾ.sʊsˈbal.dɪ.pa.ˈ
nɛ.lə.sa.bãu̯ .ˈtal.kʊ.peɾ.ˈfu.mɪ.ˈhẽ.nə.ʃa.ˈpɛw.ˈkã.dĭl.ˈli
.vroz.ka.ˈʃa.sə.ˈɪ.a.lã.ˈbi.kɪ.tɪ.ˈsi.dʊ.al.fi.ˈne.tɪ. o.
troz.ˈmuɪ̯.tʊz.aɾ.ˈti.gʊz.ˈdɪ.ĩ.ʃo.ˈval.to.daz. ves.ki.ʒu.ˈã
u̯.vi.ˈa.jə.ˈpa.ɾə.ˈou̯.trʊz.pa.ˈi.zez.ˈda.ã.me.ˈɾi.kə.la.ˈti
.nə.ˈpa.rə.vẽ.ˈdeh.ˈsuəs.pɾo.ˈdu.toz. ˈpɾe.si.zə.kõ.seˈgir.
ˈo.a.ˈval.ˈdɪ.al.ˈfã.de.gəs.pa.ˈgã.dʊ.ˈu.mə.ta.ˈɾi. fə.ˈto.
dʊz.ˈdi.az.ʒu.ˈãu̯.al.ˈmo.sə.ˈnə.ˈka.zə.ˈda.ˈsua.ˈmãɪ.ˈdo.nə
.ˈnu̯.zə.ˈa.ˈka.zə.ˈde.lə.ˈɛ.ˈdʊ.a.ˈdʊb.ˈe.fi.kə.ˈẽɪ.ˈu.mə.a
l.ˈdeɪə.ˈki.ˈse.ˈʃa.mə.sɛ.ˈl.a.ˈnil.ˈpɛh.tʊ.ˈdɪ.ˈõ.dɪ.ˈelɪ.
ˈmɔ.rə.ʒu.ˈãu̯.kos.ˈtu.mə.ˈiɾ. ˈpa.ɾə.a.sọ̯.gɪ.ˈka.də.ˈkwaɾ.
tə.ˈfe.ɾə.ˈpa.ɾə.kõ.ˈpɾaɾ.ˈũ.a.ˈxo.bə.ˈdɪ.ˈbọ̯ɪ.ˈo.ʒɪ.ˈpor.ˈ
seh.ˈseu.a.ni.veɾ.ˈsa.ɾiu̯.ˈfoɪ̯.ˈũ.ˈdiə.es.pe.si.ˈal.ˈdo.nə.
ˈnu̯.zə.ˈela.de.ˈu.ˈko.mʊ.pre.ˈzẽ.tɪ.ˈu.mə.pe.ˈkẽ.nə.ˈʒi.ɾa.
fə.dɪ.maɾ.ˈfĩ.ˈʊ.ˈkwal.ˈe.la.kõ.ˈpɾo.ˈẽɪ̯.ˈũ.leɪ̯.ˈlãu̯.tã.ˈbẽ̯
ɪ.ˈfez. umə.kõ.ˈmi. də.pɾe.di.ˈlɛ.tə.a.ˈsɛl.ga.ˈkõ.a.ˈzeɪ̯.
tɪ.ˈfrã.gʊ.ˈkõ.a.le.ˈkɾĩ.a.ˈtũ.ˈkõ.ˈmo.ʎʊ.ˈdɪ.al.ka.ˈpa.xə.
ˈkus.ˈkus.ˈdɪ.mã.dʒi.ˈɔ.kə.ˈkõ.a.zeɪ.ˈtõ.nə.iˈũ.ˈʃa.ˈdɪ.ʒaz
.ˈmĩ.ˈkõ.ʃa.ˈɾɔ.pɪ.dɪ. mo.rã.gʊ.ˈmaɪ̯s.ˈtaɾ.dɪ.ˈnə.ˈmez.mʊ.
ˈdiə.ʒʊ.ˈãu̯.sa.ˈɪu̯.ˈkõ.ˈseuz.ã.ˈmi.gʊz.ˈpa.ɾə.kõ.mẽ.mo.ˈɾaɾ
.ˈũ.ˈbar. ˈkɪ.ˈfi.kə.ˈnũ.si.ˈtʃiu̯.a.ˈlẽɪ̯.ˈdɪ.ˈteh.tõ.ˈma.
dʊ.ˈu.mə. ga.ˈxa.fə.ˈdɪ.seɾ.ˈve.ʒə.ko.ˈmeu̯.ˈki.bɪ.dɪ. ti.ɾa
.gos.tʊ.ˈ.al.ˈmõ.de.ga.ˈkõ.ˈu.mə.ˈfa.tiə.ˈdɪ.ˈkeɪ̯.ʒʊ.poɾ. ˈ
si.mə.ˈtʊ.dʊs.ˈsɪ.di.ver.ˈti.ɾãu̯.ˈmu̯.tʊ.ʒo.ˈgã.dʊ.ʃa.ˈdres.

ˈna.ˈfɛs.tə.de.xe.pẽ.tɪ.de.ũ.ɡɾa.ndɪ. ʒo.ga.də.al.ˈguẽɪ̯. pe .ˈgo.ˈʊ.ˈxo.kɪ.ˈdɪ.gri.ˈto.ˈʃek.ˈma.tɪ.a.ˈviə.ˈũ.ˈʃo.ˈdɪ.ˈũ .ˈgɾu.pʊ.mu.zi.ˈkal.ˈkɪ.tɾo.ˈka.və.ˈnʊ.kĩ.ˈtal.ˈdʊ. ˈsi.tʃi ʊ̯.ˈkõ.mo.gi.ˈta.xə.ˈɪ.ˈtã.boɾ.du.ɾã.tɪ a mu.zi.ka.ʒuãʊ̯ kõ. to.u.mə.is.tɔ.ɾi.so.bɾɪ.ũ.sɛɾ.tʊ.fu.la.nʊ.kɪ te.vɪ.u.mə.ɡɾã .dɪ.a.ˈzaɾ.ˈna.ˈvi.də.ˈfoɪ̯.ˈpe.go.ˈkõ.xa.ˈʃi.ʃɪ.ˈ ˈfoɪ.mã.ˈda.dʊ.ˈpa.ɾə.ˈu.mə.e.ˈspɛ.sɪ.ˈdɪ.ˈmaz.mo.ɾə.ˈõ. dɪ .fi.ˈko.ˈpɾe.zʊ.ˈtɾez.ˈa.nʊz.ˈkwã.tʊ.ˈa.mu.ˈzi.kə.teɾ.mi. ˈno.ʒʊ.ˈãʊ̯.vol.ˈto.ˈpa.ɾəl.ˈka.zə.ˈkõ.ˈseu.iɾ.ˈmãʊ̯.ha.ˈsã.ˈ kɪ.ˈɛ.ˈbẽɪ.di.fe.ˈɾẽ.tɪ.ˈde.lɪ.ˈto.dʊz.ˈʊz.ˈdiəz.ha.sãˈvaɪ̯. ˈna.ka.ɾa.ˈvã.nə.ˈpa.ɾə.ˈa.mes.ˈki.tə.ˈõ.dɪ.ˈmuf.tɪ.ˈsu.hə. ˈdʊ.al.ku.ˈrãʊ̯.du.ˈrã.tɪ.ˈʊ.ˈmez.ˈdɪ.xã.ma.ˈdanˈnʊ̯.ˈko.mɪ. du.ˈɾã.tɪ.ˈʊ.ˈdiə.ˈxɛ.zə.al.ˈfõ.brə.ˈha.ˈsã.ˈpẽ.sə.ˈẽɪ.ˈiɾ. ʊ.ˈpo.kuz.ˈa.nʊz.ˈpa.ɾə.ˈme.kə.ˈpa.ɾə.fa.ˈ zeɾ.ˈʊ.ˈhaʒ.ʊ ˈiɾ .ˈmãʊ̯.ʒu.ˈãʊ̯.ˈgɔs.tə.ˈmui.tʊ.ˈdɪ.stu.dar.spe.ail.mẽtɪ. al.ˈ ʒe.brə ˈelɪ.ˈgɔs.tə.ˈdɪ.ɾe.zɔw.ˈveɾ ta.ɾɛ.fas ma.te.ˈma. ti. kəs. nʊ. kwat.ɾʊ.dɪ.ʒis.ˈpa.ɾa.mos.ˈtraɾ.ˈsuə.a.bi.li.ˈda. dʒɪ.ˈkõ.ˈʊz.nu.ˈme.ɾʊs.ˈdɪ.vi.dʊ.ˈdaz.es.tɾi.ʒẽ.sias.kõ.me. ˈteʊ̯.ˈnʊ.ˈdi.ə.ˈdʊ.ˈseu.ã.ni.veɾ.ˈsa.riʊ̯.ʒu.ˈãʊ.a. ˈmysʊ̯.ˈ kõ.ẽ.ʃa.ˈke.kə.ˈpa.rə.me.ʎo. ˈɾaɾ.ˈelɪ.ko.lo.ˈko.ˈʒe.lʊ. ˈ na.ˈnu.kə.ˈto.mo.u.mə.e.ˈli.ʃir.ˈkɪ.he.kid.o.su.ʒe.ˈɾiʊ.e.u. ˈzo.ter.ˈmõ.me.tɾʊ.ˈkõ.a.ˈsoʊ̯.gɪ.ˈpa.ɾə.ˈsɪ.seɾ.ti.fi.ˈkaɾ. ˈkɪ.ˈsuə.tẽ.pe.ra.ˈtu. ɾə.es.ˈta.və.ˈbo.ə.ˈdɛ.stə.ˈvez.ˈe. sɪ.ˈmal.es.ˈtaɾ. ˈdʒɪ.ʒu.ˈãʊ̯.pa.ˈso.ˈxa.pi.dʊ.ˈmas.ˈel.ɪ. pɾõ.me.ˈteʊ̯,ˈnũ.ka. ˈmaɪ̯s.e.za.ʒe.ˈɾaɾ.ˈna.a.li.mẽ.ta.ˈsõ̯. ˈnʊ.ˈbe.bi.də]

[o.mas.ˈka.tʃɪ.ʒʊ.ãu̯ˈku.ʒə.aw.kʊ.ɲəˈɛ.ʒo.ˈãu̯.e.ˈmiɾ.ˈɛ.ˈum.
ma.ˈma.lu.kʊ.ˈpor.ˈkaw.zə.ˈda.ˈsu.ə.pro.fi.ˈsãu̯.ˈu.zəˈũ.mə
.ˈblu.zə.ˈdʒɪ.al.gõ.ˈdãu̯.ˈɪ.vi.zi.tə.ˈka.də.a.xaɪ.ˈaw. ˈdə
.ˈsu.ə.xe.ˈʒiãu̯ .ˈpa.ɾə.vẽ.ˈdeɾ.aɾ.ˈtʃi.gʊz.di.ˈveɾ.sʊsˈ ba
w.dʒɪ.pa.ˈnɛ.lə.sa.bãu̯.ˈtaw.kʊ.peˇ.ˈfu.mɪ.ˈhẽ.nə.ʃa.ˈpɛw.
ˈkã.ˈdʒiw.ˈli.vrʊs.ka.ˈʃa.sə.ˈdʒɪ.a.lã.ˈbi.kɪ.tɛ.ˈsi.dʊ.al.
fi.ˈne.tʃɪ.ɪˈo. troz.ˈmuɪ̯.tʊz.aɾ.ˈtʃi.gʊs.ˈdʒɪ.ĩ.ʃo.ˈvaw.to
. də. vez.ke.ʒu.ˈãu̯.vi.ˈa.jə.ˈpa.ɾə.ˈou̯.trʊz. pa.ˈi.zez.ˈda
.ã.me.ˈɾi.kə.la.ˈtʃi.nə.ˈpa.rə.vẽ.ˈdeɾ.ˈse.us.pro.ˈdu.tʊs.ˈ
pɾe. si.zə.kõ.se.ˈgir.ˈʊ.a.ˈvaw.ˈdɪ.aw.ˈfã.dʒɪ.gə.pa.ˈgã.dʊ
.ˈu.mə.ta.ˈɾi.fə.ˈto.dʊs.osˈdi.as.ʒu.ˈãu̯.aw.ˈmɔ.sə.ˈnə.ˈka.
zə.ˈda.ˈsua.ˈmãɪ.ˈdo.nə.ˈneu̯.zə.ˈa.ˈka.zə.ˈde.lə.ˈɛ.ˈdɪ.a.ˈ
do. bɪ.ˈe.fi.kə.ˈẽɪ.ˈu.mə.aw.ˈdeɪ.ə.ˈki.ˈse.ˈʃa.mə.seu.a.
ˈniw.ˈpɛɾ.tʊ.ˈdʒɪ.ˈõ.dɪ.ˈelɪ.ˈmɔ.rə.ʒu.ˈãu̯.kos.ˈtu.mə.ˈiɾ.ˈ
pa. ɾə.a.sọ̯.gɪ.ˈka.də.ˈkwaɾ.tə.ˈfeɪ.ɾə.ˈpa.ɾə.kõ.ˈpɾaɾ.ˈũ.
ma.ˈxo.bə.ˈdʒɪ.ˈbọ̯ɪ.ˈo.ʒɪ.ˈpoɾ.ˈseɾ.ˈseu.a.ni.veɾ.ˈsa.ɾiu̯.ˈ
foɪ̯.ˈũ.ˈdʒi.ə.es.pe.si.ˈaw.ˈdo. nə.ˈneu̯.zə.ˈlɪ.de.ˈu.ˈko.
mʊ.pre.ˈzẽ.tʃɪ.ˈũ.mə.pe.ˈkẽ.nə.ˈʒi.ɾa.fə.dʒɪ.maɾ.ˈfĩ.ˈa.
ˈkwaw.ˈɛ.la.kõ.ˈpɾo.ˈẽɪ̯.ˈũ.leɪ̯. ˈlãu̯.tã.ˈbẽ̯ɪ.ˈfez.a.su.ə.
kõ.ˈmi.də. pɾe.dʒi.ˈlɛ.tə.a.ˈsɛw.ga.ˈkõ.a.ˈzeɪ̯.tʃɪ.ˈfrã.gʊ.
ˈkõ.a.le. ˈkɾĩ.a.ˈtũ.ˈkõ.ˈmo.ʎʊ.ˈdʒɪ.al.ka.ˈpa.xə.ˈkus.ˈkus
.ˈdɪ. mã.dʒi.ˈɔ.kə.ˈkõ.a.zeɪ. ˈtõ.nə.iˈũ.ˈʃa.ˈdɪ.ʒaz.ˈmĩ.ˈ
kõ.ʃa.ˈɾɔ.pɪ.dʒɪ. mo.rã.gʊ. ˈmaɪ̯s.ˈtaɾ.dʒɪ.ˈnə.ˈmez.mʊ.ˈdʒi
.ə. ʒʊ.ˈãu̯.sa.ˈɪu̯.ˈkõ.ˈseus.ã.ˈmi.gʊs.ˈpa.ɾə.kõ.mẽ.mo.ˈɾaɾ
.ˈnũ.ˈbar.ˈkɪ.ˈfi.kə.ˈnũ.si.ˈtʃiu̯.a.ˈlẽɪ̯.ˈdʒɪ.ˈteɾ.tõ.ˈma.
dʊ.ˈu.mə.ga.ˈxa.fə.ˈdʒɪ.seɾ.ˈve.ʒə.ko.ˈmeu̯.ˈki.bɪ.dʒɪ.tʃi.ɾ
a.gos.tʊ.ˈ.aw.ˈmõ.de.gas.ˈkõ.ˈũ.mə.ˈfa.tʃiə.ˈdʒɪ.ˈkeɪ̯.ʒʊ.

poɾ.ˈsi.mə.ˈto.dʊs.ˈ sɪ.dʒi.ver.ˈti.ɾãʊ̯.ˈmuɪ̯.tʊ.ʒo.ˈgã.dʊ.
ʃa.ˈdɾes.ˈna.ˈfɛs.tə.de.xe.pẽ.tʃɪ.ẽ.u.mə.gɾã.dʒɪ. ʒo.ga.də.
al.ˈguẽɪ̯. pe.ˈgo.ˈʊ.ˈxɔ.kɪ.ˈɪ.gri.ˈto.ˈʃek.ˈma.tʃɪ.a.ˈviə.ˈ
ũ.ˈʃo.ˈdɪ.ˈũ.ˈgɾu.pʊ.mu.zi.ˈkal.ˈkɪ.to.ˈka.və.ˈnʊ.kĩ.ˈtal.ˈ
dʊ.ˈsi.tʃiʊ̯. ˈkõ.gi.ˈta.xə.ˈɪ.tã.ˈboɾ.du.ˈɾã.tʃɪ ˈa mu.ˈzi
.kə.ʒʊ.ãʊ̯ kõ.to.u.mə.is.tɔ.ɾi.so.bɾɪ. ũ.sɛɾ.tʊ.fu.la.nʊ.kɪ
te.vɪ.u.mə. gɾã.dʒɪ.a.ˈzaɾ.ˈna.ˈvi.də.ˈfoɪ̯.ˈpe.go.ˈkõ.xa.ˈ
ʃi. ʃɪ.ˈe.ˈfoɪ.mã.ˈda.dʊ.ˈpa.ɾə.ˈu.mə.e.spɛ.sɪ.ˈe.ˈdʒɪ.ˈmaz
.mo.ɾə.ˈõ.dʒɪ.fi.ˈko.ˈpɾe.zʊ.ˈtɾez.ˈa.nʊs.ˈkwã.dʊ.ˈa.mu.ˈzi
. kə. teɾ.mi.ˈno.ʒʊ.ˈãʊ̯.vol.ˈto.ˈpa.ɾa.ˈka.zə.ˈkõ.ˈseu.iɾ.ˈ
mãʊ̯.ha.ˈsã.ˈkɪ.ˈɛ.ˈbẽɪ.di.fe.ˈɾẽ.tʃɪ.ˈde.lɪ.ˈto.dʊz.ˈʊz.ˈdi
.əz.ha.sãˈvaɪ̯.ˈna.ka.ɾa.ˈvã.nə.ˈpa.ɾə.ˈa.mes.ˈki.tə.ˈõ.dʒɪ.
ʊ.ˈmut.fɪ.lɛ.a.ˈsu.ɾə.ˈdʊ.al.ku.ˈrãʊ̯.du.ˈrã.tʃɪ.ˈʊ. ˈmez.ˈ
dɪ.ɾã.ma.ˈdãˈnãʊ̯.ˈko.mɪ.du.ˈɾã.tʃɪ.ˈʊ.ˈdʒi.ə.ɪ.ˈxɛ.zə.aw.ˈ
fõ.brə. ˈha.ˈsã.ˈpẽ.sə.ˈẽɪ.ˈiɾ.aʊ.ˈpo.kuz.ˈa.nʊz.ˈpa.ɾə.ˈ
mɛ.kə.ˈpa.ɾə.fa.ˈzeɾ.ˈʊ.ˈhaʒ.ɪ.ʊ.ˈiɾ.ˈmãʊ̯.dʒɪ.ʒu.ˈɑ̃ʊ̯.ˈ gɔs.
tə.ˈmui.tʊ.ˈdʒɪ.es.tu.dar.spe.ial.mẽ.tɪ.al.ˈʒe.brə ˈelɪ.ˈgɔ
s.tə.ˈdɪ.ɾe.zɔw.ˈveɾ ta.ɾɛ.fas ma.te.ˈma.tʃi.kə.nʊ. kwad.ɾʊ.
dʒɪ.ʒis. ˈpa.ɾə.mos.ˈtraɾ.ˈoz.ko.ˈle.gəz.a.suə.a.bi.li.ˈda.
dʒɪ.ˈkõ.ˈʊz.nu.ˈme.ɾʊs.ˈde.vi.dʊ.ˈdaz. es.tɾa.va.gã.sias.kɪ
.kõ.me.ˈteʊ̯.ˈnʊ.ˈdʒi.ə.ˈdʊ.ˈseu.ã.ni.veɾ.ˈsa.riʊ̯.ʒu.ˈãʊ.a.
ma.ɲe.ˈseʊ.ˈkõ.ẽ.ʃa.ˈke.kə.ˈpa.rə.me.ʎo.ˈɾaɾ.ˈelɪ.ko.lo.ˈko
.ˈʒe.lʊ. ˈna.ˈnu.kə.to.ˈmo.um.e.ˈli.ʃir.ˈkɪ.ʊ.ha.kim.lɪ.su.
ʒe.ˈɾiʊ.e.u.ˈzo.ter.ˈmõ.me.tɾʊ.ˈkõ.a.ˈsoʊ̯.gɪ.ˈpa.ɾə..seɾ.
tʃi.fi.ˈkaɾ.ˈkɪ.ˈsuə.tẽ.pe.ra.ˈtu.ɾə.es.ˈta.və.ˈbo.ə.ˈdɛ.
stə.ˈvez. ˈe.sɪ.ˈmaw.es.ˈtaɾ. ˈdʒɪ.ʒu.ˈãʊ̯.pa.ˈso.ˈxa.pi.dʊ
.ˈmas.ˈel.ɪ.pɾõ. me.ˈteʊ̯ˈnũ.ka.ˈmaɪ̯s.ez.a.ʒe.ˈɾaɾ.ˈna.a.li.
mẽ.ta.ˈsãʊ̯.eˈna.be.ˈbi.də]

[o.mas.ˈka.tʃɪ.ʒʊ.ãu̯ˈku.ʒə.aw.kʊ.ɲəˈɛ.ʒo.ˈɑ̃u̯.e.ˈmiɾ.ˈɛ.ˈum.
ma.ˈme.lu.kʊ.ˈpor.ˈkaw.zə.ˈdʒɪ.ˈsuə.pro.fi.ˈsãu̯.ˈu.zə.ˈũm.
ə.ˈblu.zə.ˈdʒɪ.aw.gõ.ˈdãu̯.ˈɪ.vi.zi.tə.ˈka.də.a.xaɪ.ˈaw.ˈdə.
ˈsu.ə.xe.ˈʒiãu̯ .ˈpa.ɾə.vẽ.ˈdeɾ.aɾ.ˈtʃi.gʊz.di.ˈveɾ.sʊsˈbaw.
dʒɪ.pa.ˈnɛ.lə.sa.bãu̯ .ˈtaw.kʊ.peˇ.ˈfu.mɪ.ˈhẽ.nə. ʃa.ˈpɛw.
ˈkã.ˈdʒiw.ˈli.vrʊs.ka.ˈʃa.sə.ˈdʒɪ.a.lã.ˈbi.kɪ.tɛ.ˈsi.dʊ.al.
fi.ˈne.tʃɪ.ˈo.troz.ˈmuɪ̯.tʊz.aɾ.ˈtʃi.gʊz.ˈdʒɪ.ĩ.ʃo.ˈvaw.to.
də.vez.ke.ʒu.ˈãu̯.vi.ˈa.jə.ˈpa.ɾə.ˈou̯.trʊs.pa.ˈi.zes.ˈda.ã.
me.ˈɾi.kə.la.ˈtʃi.nə.ˈpa.rə.vẽ.ˈdeɾ.ˈse.us.pro.ˈdu.tʊs.ˈpɾe
.si.zə.kõ.se.ˈgir.ˈʊ.a.ˈvaw.ˈda.aw.ˈfã. dʒɪ.gə.pa.ˈgã.dʊ.ˈ
u.mə.ta.ˈɾi.fə.ˈto.dʊs.osˈdi.as.ʒu.ˈãu̯.aw.ˈmɔ.sə.ˈnə.ˈka.zə
.ˈda.ˈsu.ə.ˈmãɪ.ˈdo.nə.ˈnu̯.zə.ˈa.ˈka.zə.ˈde.lə.ˈɛ.ˈdʒɪ.a.
ˈdɔb.ɪˈ.fi.kə.ˈẽɪ.ˈũ.mə.aw.ˈdeɪ.ə.ˈki.ˈse.ˈʃa.mə.sɛ.ˈu.a.
ˈniw.ˈpɛɾ.tʊ.ˈdə.ˈõ.dʒɪ.ˈelɪ.ˈmɔ.rə. ʒu.ˈãu̯.kos.ˈtu.mə.ˈiɾ.
ˈpa.ɾə. a.ˈsǫ̣.gɪ.ˈka.də.ˈkwaɾ.tə. ˈfeɪ.ɾə.ˈpa.ɾə.kõ.ˈpɾaɾ.
ˈũˈmə.a.ˈxo.bə.ˈdʒɪ.ˈbǫ̣ɪ.ˈo.ʒɪ. ˈpoɾ.ˈseɾ.ˈseu.a.ni.veɾ.
ˈsa.ɾiu̯.ˈfoɪ̯.ˈũ.ˈdʒi.ə.es.pe.si.ˈaw.ˈdo.nə.ˈnu̯.zə.ˈlɪ.de.ˈu
.ˈko.mʊ.pre.ˈzẽ.tʃɪ.ˈũ.mə.pe. ˈkẽ. nə.ˈʒi.ɾa.fə.dɪ.maɾ.ˈfĩ
.ˈa.ˈkwaw.ˈɛ.la.kõ.ˈpɾo.ˈẽɪ̯.ˈũ.leɪ̯.ˈlãu̯.tã.ˈbẽ̯ɪ.ˈfez. su.ə.
kõ.ˈmi.də.pɾe.dʒi. ˈlɛ.tə.a.ˈsɛw.ga.ˈkõ.a.ˈzeɪ̯.tʃɪ.ˈfrã.gʊ.
ˈkõ.a.le.ˈkɾĩ.a.ˈtũ.ˈkõ.ˈmo.ʎʊ.ˈdɪ.al.ka.ˈpa.xə.ˈkus.ˈkus.ˈ
dʒɪ.mã.dʒi.ˈɔ.kə. ˈkõ.a.zeɪ.ˈtõ.nə.iˈũ.ˈʃa.ˈdɪ.ʒaz.ˈmĩ.ˈkõ
.ʃa.ˈɾɔ.pɪ.dɪ. mo.rã.gʊ. ˈmaɪ̯s.ˈtaɾ.dʒɪ.ˈnə.ˈmez.mʊ.ˈdʒi.ə
.ʒʊ.ˈãu̯.sa.ˈɪu̯.ˈkõ.ˈse. us.ã.ˈmi.gʊs.ˈpa.ɾə.kõ.mẽ.mo.ˈɾaɾ.ˈ
nũ.ˈbar.ˈkɪ.ˈfi. kə.ˈnũ.si.ˈtʃiu̯.a.ˈlẽɪ̯.ˈdʒɪ.ˈteɾ.tõ.ˈma.dʊ
.ˈu.mə.ga.ˈxa. fəˈdʒɪ.seɾ.ˈve.ʒə.ko.ˈmeu̯.ˈki.bɪ.dʒɪ. tʃi.ɾa
.gos.tʊ.ˈ.aw.ˈmõ.de. gas.ˈkõ.ˈu.mə.ˈfa.tʃi.ə.ˈdʒɪ.ˈkeɪ̯.ʒʊ.
poɾ.ˈsi.mə.ˈto.dʊs.ˈsɪ.dʒi.ver.ˈti.ɾãu̯.ˈmuɪ̯.tʊ.ʒo.ˈgã.dʊ.ʃa
.ˈdɾes.ˈna.ˈfɛs. tə.de.xe.pẽ.tʃɪ.de.ũ.grã.dʒɪ. ʒo.ga.də.al.
ˈguẽɪ̯. pe.ˈgo.ˈʊ.ˈ xɔ.kɪ.ˈɪ.gri.ˈto.ˈʃe.kɪ.ˈmatʃ.a.ˈviə.ˈũ

.ˈʃo.ˈdʒɪ.ˈũ.ˈgɾu.pʊzi.ˈkaw.ˈkɪ.tɾo.ˈka.və.ˈnʊ.kĩ.ˈtal.ˈdʊ.
ˈsi.tʃiu̯.ˈkõ.gi.ˈta.xə.ˈɪ.ˈtã.boɾ.du.ɾã.tʃɪ a mu.zi.kə.zʊãu̯
kõ.to.u.mə.is.tɔ.ɾi.so.bɾɪ. ũ.sɛɾ.tʊ.fu.la.nʊ.kɪ te.vɪ.u.
mə.gɾãdʒɪ.a.ˈzaɾ.ˈna.ˈvi.də.ˈfoi̯.ˈpe.go.ˈkõ.xa.ˈʃi.ʃɪ.mã. ˈ
da.dʊ.ˈpa.ɾə.ˈu.mə.e.ˈspɛ.sɪe.ˈdʒɪ.ˈmaz.mo.xə.ˈõ.dʒɪ.fi.ˈko
.ˈpɾe.zʊ.ˈtɾez.ˈa.nʊs.ˈkwã.dʊ.ˈa.mu.ˈzi.kə.teɾ.mi.ˈno.ʒʊ.ˈã
u̯.vol.ˈto.ˈpa.ɾa.ˈka.zə.ˈkõ.ˈseu.iɾ.ˈmãu̯.a.ˈsã.ˈkɪ.ˈɛ. ˈbẽ
ɪ.dʒi.fe.ˈɾẽ.tʃɪ.ˈde.lɪ.ˈto.dʊz.ˈʊz.ˈdʒi.əz.a.sãˈvai̯.ˈna.ka
.ɾa.ˈvã.nə.ˈpa.ɾə.ˈa.mes.ˈki.tə.ˈõ.dʒɪ.ˈmuf.tʃɪ.lɛ. a. ˈsu.
ɾə.ˈda.aw.ku.ˈrãu̯.du.ˈrã.tʃɪ.ˈʊ.ˈmez.ˈdʊ.xã.ma.ˈdãˈnãu̯.ˈko.
mɪ.du.ˈɾã.tʃɪ.ˈʊ.ˈdʒi.ə.ɪ.ˈxɛ.zə.na. aw.ˈfõ.brə.a.ˈsã.ˈpẽ.
sə.ˈẽɪ.ˈiɾ.aʊ.ˈpo.kuz.ˈa.nʊz.ˈpa.ɾə.ˈmɛ.kə.ˈpa. ɾə.fa.ˈzeɾ.
ˈa.ˈhaʒ.ɪ.ʊ.ˈiɾ.ˈmãu̯.du.ʒu.ˈɑ̃u̯.ˈgɔs.tə.ˈmui.tʊ.ˈdʒɪ.es.tu.
daɾ.spe.ial.mẽ.tɪ.al.ˈʒe.brə ˈelɪ.ˈgɔs.tə. ˈdʒɪ.xe.zɔw.
ˈveɾ ta.ɾɛ.fas ma.te.ˈma.tʃi.kəs. nʊ. kwad.ɾʊ.dʒɪ.ʒis.ˈpa.ɾa
.mos.ˈtraɾ.ˈoz.ko.ˈle.gəz.a.suə.a.bi.li. ˈda.dʒɪ.ˈkõ.ˈʊz.
nu.ˈme.ɾʊs.ˈdʒɪ.vi.dʊ.ˈdaz.es.tɾa.va.gã. sias.kɪ.kõ.me.ˈteu̯
.ˈnʊ.ˈdʒi.ə.ˈdʊ.ˈseu.ã.ni.veɾ.ˈsa.riu̯.ʒu.ˈãʊ.a.ma.ɲe.ˈseʊ.ˈ
kõ.ẽ.ʃa.ˈke.kə.ˈpa.rə.me.ʎo.ˈɾaɾ.ˈelɪ.ko.lo.ˈko.ˈʒe.lʊ.ˈna.
ˈnu.kə.ˈto.mo.e.ˈli.ʃir.ˈkɪ.ha.kim.lɪ.su.ʒe.ˈɾiʊ.e.u.ˈzo.te
r.ˈmõ.me.tɾʊ.ˈkõ.a.ˈsou̯. gɪ.ˈpa.ɾə..seɾ.tʃi.fi.ˈkaɾ.ˈkɪ.ˈsu
ə.tẽ.pe.ra.ˈtu.ɾə.es. ˈta.və.ˈbo.ə.ˈdɛ.stə.ˈvez. ˈe.sɪ.ˈma
w.es.ˈtaɾ.ˈde.ʒu.ˈãu̯.pa.ˈso.ˈxa.pi.dʊ.ˈmas.ˈel.ɪ.pɾõ.me.ˈte
u̯,ˈnũ.ka.ˈmai̯s.ez.a.ʒe. ˈɾaɾ.ˈna.a.li.mẽ.ta.ˈsãu̯.eˈna.ˈbe.
bi.də]

Appendix E: Demographics: Individual

	Sociological Variables			
ID #	Generation	Age	Gender	Schooling
SP1	2	3	1	3
SP2	1	3	1	2
SP3	1	2	0	4
SP4	2	2	0	3
SP5	2	2	0	3
SP6	2	2	0	4
SP7	1	1	0	4
SP8	2	1	1	3
SP9	1	2	0	3
SP10	1	5	0	0
SP11	2	1	1	3
SP12	2	0	1	2
SP13	3	4	1	3
SP14	3	4	1	4
SP15	3	5	1	2
SP16	2	4	1	3
SP17	3	4	1	3
SP18	3	5	0	3
SP19	2	5	0	2
SP21	1	5	1	2
SP22	1	1	0	3
SP23	1	4	0	4
SP24	3	5	0	3
SP25	2	5	1	3
SP26	1	2	1	4
SP27	1	3	0	3
SP28	1	3	1	4
SP29	2	2	0	3
SP30	2	4	1	2
SP31	1	3	0	2
SP32	2	5	0	3
SP33	1	2	1	4
SP34	1	2	1	3
SP35	1	2	1	3
SP36	1	2	0	2
SP37	1	0	0	0
SP38	3	1	1	3
SP39	3	3	0	4
SP40	3	0	0	1
SP41	1	2	1	3
SP42	2	0	1	0
SP43	1	2	0	3
SP44	2	5	0	3
SP45	1	5	1	0
SP46	1	3	0	2
SP47	1	5	0	1
SP48	2	2	1	3
SP49	1	5	1	0
SP50	0	2	1	0
SP51	2	0	1	0
SP52	2	3	0	2

Generation
0-SP native (not LB)
1-First Generation Lebanese
2-Second Generation Lebanese
3-Third Generation Lebanese

Age

0-18-25
1-26-35
2-36-45
3-46-55
4-56-64
5-65+

Sex
1-Female
0-Male

Level of Schooling
0-8th grade or below
1-High school
2-Some college
3-College graduate
4-Graduate school

ID	Generation	Age	Gender	Schooling
S1	0	2	1	4
S2	0	3	1	4
S3	0	0	1	1
S4	0	4	0	3
S5	0	5	1	0
S6	0	5	0	1
S7	0	2	0	1
S9	0	1	0	1
S11	0	2	1	1
S12	0	1	0	1

Appendix F: Transcription of Assimilation Tokens

	mascate	de	artigos	diversos	balde	candil
SP2	mas.'ka.tɪ	'dɪ	ar.'ti.gʊs	di.'ver.sʊs	'bal.dɪ	kã.'dil
SP3	mas.'ka.tɪ	'de	ar.'ti.gʊs	di.'ver.sʊs	'bal.dɪ	kã.'dil
SP7	mas.'ka.tʃɪ	'dɪ	ar.'ti.gʊs	di.'ver.sʊs	'bal.dɪ	kã.'dʒil
SP9	mas.'ka.tɪ	'dɪ	ar.'ti.gʊs	di.'ver.sʊ	'bal.dʒɪ	ka.'dʒil
SP10	mas.'ka.tɪ	'dʊ	ar.'ti.gʊs	di.'veh.sʊs	'bal.dɪ	kã.'dil
SP26	mas.'ka.tɪ	'dɪ	ar.'ti.gʊs	di.'ver.sʊs	'baw.dɪ	kã.'dʒiw
SP27	mas.'ka.tʃɪ	'da	ar.'ti.gʊ	di.'ver.sʊs	'bal.dɪ	kã.'diw
SP28	mas.'ka.tʃɪ	'də	ar.'tʃi.gʊs	dʒi.'ver.sʊs	'baw.dʒɪ	kã.'dʒiw
SP31	mas.'ka.tʃɪ	'dɪ	ar.'tʃi.gʊs	di.'ver.sʊs	'baw.dɪ	kã.'dʒiw
SP33	mas.'ka.tɪ	'dɪ	ar.'ti.gʊs	di.'ver.sʊs	'bal.dɪ	kã.'dil
SP36	mes.'ka.tɪ	'dɪ	ar.'ti.gʊs	di.'ver.sʊs	'baw.dɪ	kã.'diw
SP37	mes.'ka.tɪ	'dɪ	ar.'ti.gʊs	di.'ver.sʊs	'baw.dʒɪ	kã.'dʒiw
SP43	mas.'ka.tɪ	'dɪ	ar.'ti.gʊs	di.'ver.sʊs	'bal.dʒɪ	kã.'dil
SP47	mas.'ka.tɪ	'dɪ	ar.'ti.gʊs	di.'ver.sʊs	'baw.dɪ	kã.'diw
SP49	mas.'ka.tʃɪ	'dʒɪ	ar.'tʃi.gʊs	dʒi.'ver.sʊs	'baw.dʒɪ	kã.'dʒiw

	artigos	latina	dias	de	onde	de	dia
SP2	ar.'ti.guz	la.'ti.nə	'di.əz	'dɪ	'õ.dɪ	'dɪ	'di.ə
SP3	ar.'ti.gus	la.'ti.nə	'di.əz	'du	'õ.dɪ	'du	'di.ə
SP7	ar.'ti.guz	la.'ti.nəs	'dʒi.əz	'dʒɪ	'õ.dzɪ	'du	'dzi.ə
SP9	ar.'ti.gus	la.'tʃi.nə	'di.əz	'dʒɪ	'õ.dɪ	'dɪ	'di.ə
SP10	ar.'tigz	la.'ti.nə	'di.əz	'də	'õ.dɪ	'du	'di.ə
SP26	ar.'ti.gus	la.'ti.nə	'di.əz	'dɪ	'õ.dɪ	'dɪ	'di.ə
SP27	ar.'ti.gu	la.'ti.nə	'di.ə	'do	'õ.dʒɪ	'dɪ	'di.ə
SP28	ar.'tʃi.gus	la.'tʃi.nə	'dʒi.əz	'dʒɪ	'õ.dʒɪ	'dʒɪ	'dʒi.ə
SP31	ar.'ti.gus	la.'tʃi.nə	'di.əz	'dɪ	'õ.dɪ	'dɪ	'dʒi.ə
SP33	ar.'ti.gus	la.'ti.nə	'di.əz	'dɪ	'õ.dɪ	'dɪ	'di.ə
SP36	ar.'ti.gus	la.'ti.nə	'di.əz	'dɪ	'õ.dɪ	'dɪ	'di.ə
SP37	ar.'ti.gus	la.'tʃi.nə	'di.əz	'dɪ	'õ.dɪ	'dɪ	'dʒi.ə
SP43	ar.'ti.gus	la.'ti.nə	'dʒi.əz	'dɪ	'õ.dʒɪ	'dɪ	'dʒi.ə
SP47	ar.'ti.gus	la.'ti.nə	'di.əz	'dɪ	'õ.dɪ	'dɪ	'dɪ.ə
SP49	ar.'tʃi.gus	la.'tʃi.nə	'dʒi.əz	'dʒɪ	'õ.dʒɪ	'dʒɪ	'dʒɪ.ə

	predileta	azeite	fatia	de	divertiram	de
SP2	ɹɐ.di.'le.tə	a.'zeɪ̯.tɪ	fa.'ti.ə	'dɪ	di.veɾ.'ti.ɾɐ̃ʊ̯	'dɪ
SP3	ɹɐ.di.'lɛ.tə	a.'zeɪ̯t	fa.'ti.ə	'dɪ	di.veɾ.'ti.ɾɐ̃	'de
SP7	ɹɐ.di.'lɛ.tə	a.'zeɪ̯.tʃɪ	fa.'tʃi.ə	'dɪ	di.veɾ.'ti ɾɐ̃	'de
SP9	ɹɐ.di.'lɛ.tə	a.'zeɪ̯.tɪ	fa.'tʃi.ə	'dɪ	dɪ.veɾ.'tʃi.ɾɐ̃	'di
SP10	ɹɐ.di.'lɛ.tə	a.'zeɪ̯t	fa.'ti.ə	'dʒɪ	di.veɾ.ti.'ɾa	no
SP26	ɹɐ.di.'lɛ.tə	a.'zeɪ̯.tɪ	fa.'ti.ə	'dɪ	di.veɾ.'ti.ɾɐ̃ʊ̯	'dɪ
SP27	ɹɐ.di.'lɛ.tə	a.'zeɪ̯.tɪ	fa.'ti.ə	'dɪ	di.veɾ.'ti.ɾɐ̃	'de
SP28	ɹɐ.dʒi.'lɛ.tə	a.'zeɪ̯.tʃɪ	fa.'ti.ə	'dɪ	di.veɾ.'tʃi.ɾɐ̃ʊ̯	'dɪ
SP31	no	'zeɪ̯.tʃɪ	fa.'tsi.ə	'dɪ	di.veɾ.'tʃi.ɾɐ̃ʊ̯	'dɪ
SP33	no	a.'zeɪ̯.tɪ	fa.'ti.ə	'dɪ	di.veɾ.'ti.ɾa	'de
SP36	ɹɐ.di.'lɛ.tə	a.'zeɪ̯t	fa.'ti.ə	'dɪ	di.veɾ.'ti.ɾɐ̃	'dɪ
SP37	ɹe.di.'lɛ.tə	a.'zeɪ̯tʃ	fa.'tʃi.ə	'de	di.veɾ.'ti.ɾɐ̃	'de
SP43	ɹɐ.di.'lɪ.tə	a.'zeɪ̯.tʃɪ	fa.'ti.ə	'dɪ	di.veɾ.'ti ɾɐ̃	'de
SP47	ɹɐ.di.'lɛ.tə	a.'zeɪ̯.tɪ	fa.'ti.ə	'dɪ	di.veɾ.'tʃi.ɾɐ̃	'dɪ
SP49	ɹɐ.dʒi.'lɛ.tə	a.'zeɪ̯.tʃɪ	fa.'tʃi.ə	'dɪ	di.veɾ.'tʃi.ɾɐ̃	'dɪ

	repente	grande	mate	de	sítio	durante
SP2	xe.ˈpẽ.tɪ	ˈgɾã.dɪ	ˈma.tɪ	ˈdɪ	ˈsi.tiu̯	du.ˈɾã.tɪ
SP3	xe.pẽ.tɪ		ˈma.tɪ	ˈdɪ	ˈsi.tiu̯	du.ˈɾã.tɪ
SP7	ɾe.ˈpẽ.tɪ	ˈgɾã.dʒɪ	ˈmatʃ	ˈdɪ	ˈsi.tʃiu̯	du.ˈɾã.tʃɪ
SP9	no	ˈgɾã.dʒɪ	ˈma.tɪ	ˈdʊ	ˈsi.tʃiu̯	du.ˈɾã.tʃɪ
SP10	no	ˈgɾã.dɪ	ˈma.tɪ	ˈdu	ˈsi.tʃiu̯	du.ˈɾã.tɪ
SP26	xe.ˈpẽ.tʃɪ	ˈgɾã.dɪ	ˈma.tʃɪ		ˈsi.tʃiu̯	du.ˈɾã.tʃɪ
SP27	xe.ˈpẽ.tʃɪ	ˈgɾã.dʒɪ	no	no	ˈsi.tʃiu̯	du.ˈɾã.tʃɪ
SP28	xe.ˈpẽ.tʃɪ	ˈgɾã.dʒɪ	ˈmatʃ	ˈdu	ˈsi.tʃiu̯	du.ˈɾã.tʃɪ
SP31	xe.ˈpẽ.tʃɪ	ˈgɾan.dʒɪ	ˈmatʃ	ˈdɪ	ˈsi.tʃiʊ	du.ˈɾan.tɪ
SP33	xe.ˈpẽ.tɪ	ˈgɾã.dɪ	ˈmats	ˈdɪ	ˈsi.tʃiu̯	du.ˈɾã.tɪ
SP36	xe.pẽ.ti	ˈgrã.dɪ	ˈmat	ˈdɪ	ˈsi.ˈtʃiʊ	du.ˈɾã.tɪ
SP37	xe.ˈpẽ.tʃɪ	ˈgɾã.dɪ	ˈmat	ˈdɪ	ˈsi.tʃiʊ	du.ˈɾã.tɪ
SP43	xe.pẽ.tʃɪ	ˈgɾã.dɪ	ˈmă.tɪ	ˈdɪ	ˈsi.tiʊ	du.ˈɾã.tɪ
SP47	ɾe.ˈpẽ.ti	ˈgɾã.dɪ	ˈmat	ˈdʒɪ	ˈsi.tʃiu̯	du.ˈɾã.tɪ
SP49	xe.pẽ.tʃɪ	ˈgɾã.dʒɪ	ˈmatʃ	ˈdʒɪ	ˈsi.tʃiu̯	du.ˈɾã.tʃɪ

	grande	onde	diferente	dias	onde	mufti
SP2	ˈgrɑ̃.dɪ	ˈõ.dɪ	di.fe.ˈrẽ.tɪ	ˈdi.əs	ˈõ.dɪ	ˈmuf.tɪ
SP3	ˈgrɑ̃.dɪ	ˈõ.dɪ	di.fe.ˈrẽ.tɪ	ˈdʒi.əs	ˈõ.dɪ	ˈmuf.tɪ
SP7	ˈgrɑ̃.dʒɪ	ˈõ.dʒɪ	di.fe.ˈrẽ.tʃɪ	ˈʒi.əs	ˈõ.dɪ	ˈmuf.tɪ
SP9	ˈgrɑ̃.dʒɪ	ˈõ.dɪ	di.fe.ˈrẽ.tɪ	ˈdi.ə	ˈõ.dʒɪ	ˈmuf.tɪ
SP10	ˈgrɑ̃.dɪ	ˈõ.dɪ	di.fe.ˈrẽ.tɪ	ˈdi.ə	ˈõ.dɪ	ˈmuf.tɪ
SP26	ˈgrɑ̃.dɪ	ˈõ.dʒɪ	dʒi.fe.ˈrẽ.tʃɪ	ˈdi.əs	ˈõ.dɪ	ˈmuf.tʃɪ
SP27	ˈgrɑ̃.dɪ	ˈõ.dʒɪ	di.fe.ˈrẽ.tɪ	ˈdi.ə	ˈaõ.dʒɪ	ˈmuf.tɪ
SP28	ˈgrɑ̃.dʒɪ	ˈõ.dʒɪ	dʒi.fe.ˈrẽ.tʃɪ	dʒi.əs	ˈõ.dʒɪ	ˈmuf.tʃɪ
SP31	ˈgrɑ̃.dɪ	ˈõ.dɪ	dʒi.fe.ˈrẽ.tʃɪ	ˈdʒi.əs	ˈõ.dɪ	ˈmuf.tɪ
SP33	ˈgrɑ̃.dɪ	ˈõ.dɪ	di.fe.ˈrẽ.tʃɪ	ˈdi.əs	ˈõ.dɪ	ˈmuf.tɪ
SP36	ˈgrɑ̃.dɪ	ˈõ.dɪ	di.fe.ˈrẽ.tɪ	ˈdi.ə	ˈõ.dɪ	ˈmuf.tɪ
SP37	ˈgrɑ̃.dʒɪ	ˈõ.dʒɪ	di.fe.ˈrẽ.tʃɪ	ˈdi.ə	õ.dʒɪ	ˈmuf.tɪ
SP43	ˈgrɑ̃.dɪ	ˈõ.dʒɪ	di.fe.ˈrẽ.tʃɪ	ˈdʒi.əs	ˈõ.dɪ	ˈmuf.tɪ
SP47	ˈgrɑ̃.dɪ	ˈõ.dɪ	di.fe.ˈrẽ.tɪ	ˈdi.əs	ˈaõ.dɪ	ˈmuf.tɪ
SP49	ˈgrɑ̃.dʒɪ	ˈõ.dʒɪ	dʒi.fe.ˈrẽ.tʃɪ	ˈdʒi.əs	ˈõ.dʒɪ	ˈmuf.tɪ

	durante	dia	presente	de	alfinete	certificar
SP2	du.ˈɾã.tɪ	ˈdi.ə	pɾe.ˈzẽ.tɪ	ˈdɪ	al.fi.ˈne.tɪ	seɾ.ti.fi.ˈkaɾ
SP3	du.ˈɾã.tɪ	ˈdi.ə	pɾe.ˈzẽ.tɪ	ˈdɪ	al.fi.ˈne.tɪ	seɾ.ti.fi.ˈkaɾ
SP7	du.ˈɾã.tʃɪ	ˈdʒi.ə	pɾe.ˈzẽ.tʃɪ	ˈdɪ	al.fi.ˈne.tʃɪ	seɾ.ti.fi.ˈkaɾ
SP9	du.ˈɾã.tʃɪ	ˈdʒi.ə	pɾe.ˈzẽ.tʃɪ	ˈdɪ	al.fi.ˈne.tɪ	seɾ.ti.fi.ˈkaɾ
SP10	du.ˈɾã.tɪ	ˈdi.ə	pɾe.ˈzẽt	ˈdu	aw.fi.ˈne.tʃ	seɾ.tʃi.fi.ˈkaɾ
SP26	du.ˈɾã.tʃɪ	ˈdʒi.ə	pɾe.ˈzẽ.tʃɪ	ˈdɪ	aw.fi.ˈne.tɪ	seɾ.ti.fi.ˈkaɾ
SP27	du.ˈɾã.tɪ	ˈdi.ə	pɾe.ˈzẽ.tɪ	ˈde	aw.fai.ˈnet	seɾ.ti.fi.ˈkaɾ
SP28	du.ˈɾã.tʃɪ	ˈdʒi.ə	pɾe.ˈzẽ.tʃɪ	ˈdʒɪ	aw.fi.ˈne.tʃɪ	seɾ.tʃi.fi.ˈkaɾ
SP31	du.ˈɾã.tɪ	ˈdʒi.ə	pɾe.ˈzẽ.tʃɪ	no	aw.fi.ˈne.tʃɪ	seɾ.ti.fi.ˈkaɾ
SP33	du.ˈɾã.tɪ	ˈdi.ə	pɾe.ˈzẽ.tɪ	ˈdɪ	al.fi.ˈne.tɪ	seɾ.ti.fi.ˈkaɾ
SP36	du.ˈɾã.tɪ	ˈdi.ə	pɾe.ˈzẽ.tɪ	ˈdɪ	aw.fi.ˈne.tɪ	seɾ.ti.fi.ˈkaɾ
SP37	du.ˈɾãt	ˈdi.ə	pɾe.ˈzẽtʃ	ˈdɪ	aw.fi.ˈne.tʃ	did not say
SP43	du.ˈɾã.tɪ	ˈdʒi.ə	pɾe.ˈzẽ.tʃɪ	ˈdɪ	al.fi.ˈne.tɪ	seɾ.ti.fi.ˈkaɾ
SP47	du.ˈrã.tɪ	ˈdi.ə	pɾe.ˈzẽ.tɪ	ˈdɪ	aw.fi.ˈne.tʃɪ	seɾ.ti.fi.ˈkaɾ
SP49	du.ˈrã.tʃɪ	ˈdʒi.ə	pɾe.ˈzẽ.tʃɪ	ˈdʒɪ	aw.fi.ˈne.tʃɪ	seɾ.tʃi.fi.ˈkaɾ

	de	especialmente	de	matematica	habilidade	dia
SP2	ˈdɪ	spe.ail.ˈmẽ.tɪ	ˈdɪ	ma.te.ˈma.ti.kəz	a.bi.li.ˈda.dʒɪ	ˈdi.ə
SP3		es.pe.si.al.mẽ.tɪ	ˈdɪ	ma.te.ˈma.ti.kəs	a.bi.li.ˈda.dɪ	ˈdi.ə
SP7	ˈde	es.pe.si.al.ˈmẽ.tʃɪ	ˈde	ˈma.te.ma.ti.kəs	a.bi.li.ˈda.dʒɪ	ˈdi.ə
SP9	ˈdɪ	spe.si.al.ˈmẽ.tɪ	ˈdɪ	ma.te.ˈma.ti.kəs	a.bi.li.ˈda.dɪ	ˈdʒi.ə
SP10	ˈdu	es.pe.si.al.ˈmẽ.tɪ	ˈdʒɪ	ma.te.ˈma.ti.kə	a.bi.li.ˈda.dɪ	ˈdi.ə
SP26	ˈdɪ	es.pe.si.al.ˈmẽ.tɪ	ˈdɪ	ma.te.ˈma.ti.kə	a.bi.li.ˈda.dɪ	ˈdi.ə
SP27	ˈdɪ	es.be.bal.ˈmẽ.tɪ	ˈdɪ	ma.te.ˈma.ti.kə	no	no
SP28	ˈdɪ	es.pe.si.al.ˈmẽ.tʃɪ	ˈdʒɪ	ma.te.ˈma.tʃi.kəs	a.bi.li.ˈda.dʒɪ	ˈdi.ə
SP31	ˈdɪ	es.pe.si.al.ˈmẽ.tɪ	ˈdɪ	ma.te.ˈma.tʃi.kəs	a.bi.li.ˈda.dɪ	ˈdi.ə
SP33	ˈdɪ	es.pe.sail.ˈmẽt	ˈdʒɪ	ma.te.ˈma.tʃi.kəs	a.bi.li.ˈda.dʒɪ	ˈdi.ə
SP36	ˈdɪ	es.pe.si.al.ˈmẽ.tɪ	ˈdɪ	ma.te.ˈma.tʃi.kəs	a.bi.li.ˈda.dɪ	ˈdi.ə
SP37	ˈdɪ	es.pe.si.al.ˈmẽ.tɪ	ˈde	ma.te.ˈma.tʃi.kəs	a.bi.li.ˈda.dɪ	ˈdʒi.ə
SP43	ˈde	es.pe.si.al.mẽ.ti	ˈdɪ	ma.te.ˈma.ti.kəs	a.bi.li.ˈda.dɪ	ˈdʒi.ə
SP47	ˈdɪ	spe.sil'mẽ.tɪ	ˈdɪ	ma.te.ˈma.tʃi.kə	a.bi.li.ˈda.dɪ	ˈdi.ə
SP49	ˈdʒɪ	es.pe.si.al'mẽ.tɪ		ma.te.ˈma.tʃi.kə	a.bi.li.ˈda.dʒɪ	ˈdʒi.ə

	de	de	mandioca	de	tarde	dia	sitio	de	de
SP2	ˈdɪ	ˈdɪ	mã.dʒi.ˈɔ.kə	ˈdɪ	ˈtaɾ.dɪ	ˈdi.ə	ˈsi.tʃiu̯	ˈdɪ	ˈdɪ
SP3	ˈdɪ	ˈdɪ	mã.di.ˈɔ.kə	ˈdɪ	ˈtaɾ.dɪ	ˈdi.ə	ˈsi.tiu̯	ˈdɪ	ˈdɪ
SP7	ˈdɪ	ˈde	mã.dʒi.ˈɔ.kə	ˈdɪ	ˈtaɾ.dʒɪ	ˈdzi.ə	ˈsi.tʃiʊ	ˈdɪ	ˈdɪ
SP9	ˈdzɪ	ˈdɪ	mã.dʒi.ˈɔ.kə	ˈdɪ	ˈtaɾ.dɪ	ˈdi.ə	ˈsi.tʃiu̯	ˈdʒɪ	ˈdɪ
SP10	ˈdə	ˈdə	mã.di.ˈɔ.kə	ˈde	ˈtaɾ.dɪ	ˈdi.ə	ˈsi.tʃiʊ	ˈdzɪ	ˈdɪ
SP26	ˈdɪ	ˈdɪ	mã.dʒi.ˈɔ.kə	ˈdɪ	ˈtaɾ.dɪ	ˈdi.ə	ˈsi.tʃiʊ	ˈde	ˈdɪ
SP27	ˈdɪ	ˈdɪ	mã.dʒi.ˈɔ.kə	ˈdɪ	ˈtaɾ.dʒɪ	ˈdi.ə	ˈsi.tʃiʊ	ˈde	ˈdɪ
SP28	ˈdʒɪ	ˈdʒɪ	mã.dʒi.ˈɔ.kə	ˈdɪ	ˈtaɾ.dʒɪ	ˈdʒi.ə	ˈsi.tʃiu̯	ˈde	ˈdɪ
SP31	ˈdɪ	ˈdɪ	mã.dʒi.ˈɔ.kə	ˈdɪ	ˈtaɾ.dɪ	ˈdʒi.ə	ˈsi.tʃiʊ	ˈde	ˈdɪ
SP33	ˈdɪ	ˈdɪ	mã.dʒi.ˈɔ.kə	ˈdɪ	ˈtaɾ.dɪ	ˈdi.ə	si.ˈtʃiu̯	ˈdɪ	ˈdɪ
SP36	ˈdɪ	ˈdɪ	mã.di.ˈɔ.kə	ˈdɪ	ˈtaɾ.dɪ	ˈdʒi.ə	ˈsi.tʃiu̯	ˈdɪ	ˈdɪ
SP37	ˈdɪ	ˈdɪ	mã.dʒi.ˈɔ.kə	ˈdɪ	ˈtaɾ.dɪ	ˈdʒi.ə	ˈsi.tʃiu̯	ˈdɪ	ˈdɪ
SP43	ˈdɪ	ˈdɪ	mã.di.ˈɔ.kə	ˈde	ˈtaɾ.dʒɪ	ˈdʒi.ə	ˈsi.tiʊ	ˈdɪ	ˈdɪ
SP47	ˈdɪ	ˈdɪ	mã.dʒi.ˈɔ.kə	ˈdɪ	ˈtaɾ.dɪ	ˈdi.ə	ˈsi.tʃiu̯	ˈdɪ	ˈdɪ
SP49	ˈdɪ	ˈdɪ	mã.dʒi.ˈɔ.kə	ˈdɪ	ˈtaɾ.dʒɪ	ˈdʒi.ə	ˈsi.tʃiu̯	ˈdɪ	ˈdɪ

	tiragosto	artigos	perfume	aniversário
SP2	ti.ɾa.'gos.to	aɾ.'ti.gus	peɾ.'fu.mɪ	a.ni.veɾ.'sa.ɾiu̯
SP3	ti.ɾa.'gɔs.tu	aɾ.'ti.gus	peɾ.'fiu.mɪ	a.ni.veɾ.'sa.riu̯
SP7	ti.ɾa.'gos.to	aɾ.'ti.gus	peɾ.'fiu.mɪ	a.ni.veɾ.'sa.riu̯
SP9	tʃi.ɾa.'gos.to	aɾ.'ti.gus	peɾ.'fu.mɪ	a.ni.veh.'sa.ɾiu̯
SP10	ti.ɾa.'gos.tu	aɾ.'tigz	peh.'fu.mɪ	a.ni.veɾ.'sa.ɾiu̯
SP26	ti.ɾa.'gos.tu	aɾ.'ti.gus	peɾ.'fu.mɪ	a.ni.veɾ.'sa.ɾiu̯
SP27	ti.ɾa.'gos.tu	aɾ.'ti.gu	peɾ.'fu.mɪ	a.ni.veɾ.'sa.ɾiu̯
SP28	tʃi.ɾa.'gos.tu	aɾ.'tʃi.gus	peɾ.'fu.mɪ	a.ni.veɾ.'sa.ɾiu̯
SP31	tʃi.ra.'gos.tu	aɾ.'ti.gus	per.'fu.mɪ	a.ni.veɾ.'sa.ɾiu̯
SP33	ti.'ɾa.gos.tu	aɾ.'ti.gus	peɾ.'fu.mɪ	a.ni.veɾ.'sa.ɾiu̯
SP36	ti.ɾa.'gɔs.tu	aɾ.'ti.gus	peɾ.'fu.mɪ	a.ni.veɾ.'sa.riu
SP37	ti.ɾa.'gɔs.tu	aɾ.'ti.gus	peɾ.'fu.mɪ	a.ni.veɾ.'sa.ɾiu̯
SP43	ti.ɾa.'gos.to	aɾ.'ti.gus	peɾ.'fiu.mɪ	a.ni.ver.'sa.ɾiu̯
SP47	ti.ɾa.'gos.tu	aɾ.'ti.gus	peɾ.'fu.mɪ	a.ni.veɾ.'sa.ɾiu̯
SP49	tʃi.ɾa.'gos.tu	aɾ.'tʃi.gus	peɾ.'fu.mɪ	a.ni.veɾ.'sa.ɾiu̯

	conseguir	perto	ir	quarta	comprar	arroba	ser
SP2	kõ.se.'giɾ	'pɛɾ.tʊ	'iɾ	'kwaɾ.tə	kõ.'pɾaɾ	a.'xo.bə	'seh
SP3	kõ.se.'giɾ	'pɛɾ.tʊ	'iɾ	'kwah.tə	kõ.'pɾaɾ	a.'xo.bə	'seɾ
SP7	kõ.se.'giɾ	'pɛɾ.tʊ	'ir	'ka.tə	kõ.'pɾaɾ	a.'ʁo.bə	'seɾ
SP9	kõ.se.'gir	'pɛɾ.tʊ	'iɾ	'kwaɾ.tə	kõ.'pɾaɾ	a.'xo.bə	'seɾ
SP10	kõ.se.'giɾ	'pɛɾ.tʊ	'iɾ	'kwaɾ.tə	kõ.'pɾaɾ	a.'ɾo.bə	'seɾ
SP26	kõ.se.'giɾ	'pɛɾ.tʊ	'iɾ	'kwaɾ.tə	kõ.'pɾaɾ	a.'xo.bə	'seɾ
SP27	kõ.se.'giɾ	'pɛɾ.tʊ	'iɾ	'kwaɾ.tə	kõ.'pɾaɾ	a.'xo.bə	'seɾ
SP28	kõ.se.'gir	'pɛɾ.tʊ	'iɾ	'kwaɾ.tə	kõ.'pɾaɾ	a.'xo.bə	'seɾ
SP31	kõ.se.'giɾ	'pɛɾ.tʊ	'ih	'kwah.tə	kõ.'pɾaɾ	a.'xo.bə	'seh
SP33	kõ.se.'giɾ	'pɛɾ.tʊ	'ih	'kwah.tə	kõ.'pɾaɾ	a.'xo.bə	'seh
SP36	kõ.se.'gir	'pɛɾ.tʊ	'iɾ	'kin.tə	kõ.'pɾaɾ	a.'xo.bə	'seɾ
SP37	kõ.se.'giɾ	'pɛɾ.tʊ	'iɾ	'kwar.tə	kõ.'pɾaɾ	a.'xo.bə	'seɾ
SP43	kõ.se.'giɾ	'pɛɾ.tʊ	'iɾ	'kwa.tə	kõ.'pɾah	a.'ɾo.bə	'seɾ
SP47	kõ.se.'giɾ	'pɛɾ.tʊ	'iɾ	'kwaɾ.tə	kõ.'pɾaɾ	a.'ř̆o.bə	'seɾ
SP49	kõ.se.'giɾ	'pɛɾ.tʊ	'iɾ	'kwaɾ.tə	kõ.'pɾaɾ	a.'xo.bə	'seɾ

	alcaparra	tarde	comemorar	bar	garrafa	cerveja	por
SP2	al.ka.'pa.xə	'tar.dɪ	ko.mẽ.mo.'ɾar	'bar	ga.'xa.fə	ser.'ve.ʒə	'por
SP3	al.ka.'pa.xə	'tar.dɪ	kõ.mẽ.mo.'ɾar	'bar	ga.'xa.fə	ser.'ve.ʒə	'poh
SP7	al.ka.'pa.ʁə	'tar.dʒɪ	kõ.mẽ.mo.'ɾar	'bar	ga.'xa.fə	ser.'ve.ʒə	'poh
SP9	al.ka.'pa.xə	'tar.dɪ	ko.me.mo.'ɾah	'bar	ga.'ɾa.fə	ser.'ve.ʒə	'puh
SP10	aw.ka.'pa.ɾə	'tar.dɪ	kõ.mẽ.mo.'ɾar	'bar	ga.'ɾa.fə	ser.'ve.ʒə	'por
SP26	aw.ka.'pa.xə	'tar.dɪ	kõ.mẽ.mo.'ɾar		ga.'xa.fə	ser.'ve.ʒə	'por
SP27	aw.ka.'peɾ	'tar.dʒɪ	kõ.mẽ.mo.'ɾar	'bar	ga.'xa.fə	ser.'ve.ʒə	'por
SP28	aw.ka.'pa.xəs	'tar.dʒɪ	kõ.mẽ.mo.'ɾar		ga.'xa.fə	ser.'ve.ʒə	'por
SP31	al.ka.'pa.ɾə	'tar.dɪ	kõ.mẽ.mo.'ɾar	'bar	ga.'xa.fə	ser.'ve.ʒə	'poh
SP33	al.ka.'pa.ɾə	'tar.dɪ	kõ.mẽ.mo.'ɾar	'bar	ga.'xa.fə	ser.'ve.ʒə	'poh
SP36	aw.ka.'pa.xə	'tar.dɪ	kõ.mẽ.mo.'ɾar	'bar	ga.'xa.fə	ser.'ve.ʒə	'poh
SP37	aw.ka.'pa.xə	'tar.dɪ	kõ.mẽ.mo.'ɾar	'bar	ga.'xa.fə	ser.'ve.ʒə	'por
SP43	al.ka.'pa.xə	'tar.dʒɪ	kõ.mẽ.mo.'ɾar	'bar	ga.'xa.fə	ser.'ve.ʒə	'poh
SP47	aw.ka.'pax	'tar.dɪ	kõ.mẽ.mo.'ɾaɾ̌	'bar	ga.'ɾ̌a.fə	ser.'ve.ʒə	'por
SP49	aw.ka.'pa.xəs	'tar.dʒɪ	kõ.mẽ.mo.'ɾar	'bar	ga.'xa.fə	ser.'ve.ʒə	'por

	roque	guitarra	tambor	azar	mazmorra	terminou	divertiram
SP2	ˈxɔ.kɪ	gi.ˈta.xə	tã.ˈboɾ	a.ˈzaɾ	maz.mo.ř̆ə	teɾ.mi.ˈno	di.veɾ.ˈti.ɾãu̯
SP3	ˈxo.kɪ	gi.ˈta.xə	tã.ˈboɾ	a.ˈzaɾ	maz.ˈmo.xə	teɾ.mi.ˈno	di.veɾ.ˈti rã
SP7	ˈxo.kɪ	gi.ˈta.ʁə	tã.ˈboɾ	a.ˈzaɾ	maz.ˈmo.xə	teɾ.mi.ˈno	ˈdi.veɾ.ˈti ɾã
SP9	ˈxɔ.kɪ	gi.ˈta.xə	tã.ˈboɾ	a.ˈzaɾ	maz.ˈmo.xə	teɾ.mi.ˈno	di.veɾ.ˈti.rã
SP10	ˈɾo.kɪ	gi.ˈta.ɾə	tã.ˈboɾ	a.ˈzaɾ	maz.ˈmo.ɾə	teɾ.mi.ˈno	di.veɾ.ˈti.rã
SP26	ˈxɔ.kɪ	gi.ˈta.xə	tã.ˈboɾ	a.ˈzaɾ	maz.ˈmo.zə	teɾ.mi.ˈno	di.veɾ.ˈti.ɾãu̯
SP27	no	gi.ˈta.ɾə	ˈtã.boɾ	a.ˈzaɾ	ma.sa.ˈmo.zə	teɾ.mi.ˈno	di.veɾ.ˈti.rã
SP28	ˈxɔ.kɪ	gi.ˈta.xə	tã.ˈboɾ	a.ˈzaɾ	maz.ˈmo.zə	teɾ.mi.ˈno	di.veɾ.ˈti.ɾãu̯
SP31	ˈxo.kɪ	gi.ˈta.xə	tã.ˈboɾ	a.ˈzaɾ	maz.ˈmo.xə	teɾ.mi.ˈno	di.veɾ.ˈti.ɾãu̯
SP33	ˈxo.kɪ	gi.ˈta.xə	tã.ˈboɾ	a.ˈzaɾ	maz.ˈmo.xə	teɾ.mi.ˈno	di.veɾ.ˈti.ɾãu̯
SP36	ˈxɔ.kɪ	gi.ˈta.xə	tã.ˈboɾ	a.ˈzaɾ	maz.ˈmo.xə	teɾ.mi.ˈno	dɪ.veɾ.ˈti.rã
SP37	ˈxɔ.kɪ	gi.ˈta.xə	tã.ˈboɾ	a.ˈzaɾ	maz.ˈmo.xə	teɾ.mi.ˈno	di.veɾ.ˈti.ɾãu̯
SP43	ˈxo.kɪ	gi.ˈta.rə	tã.ˈbor	a.ˈzaɾ	maz.ˈmo.xə	teɾ.mi.ˈno	di.veɾ.ˈti ɾã
SP47	ˈɾo.kɪ	gi.ˈta.xə	tã.ˈboɾ	a.ˈzaɾ	maz.ˈmo.ř̆ə	teɾ.mi.ˈno	di.veɾ.ˈti ɾã
SP49	ˈxɔ.kɪ	gi.ˈta.xə	tã.ˈboɾ	a.ˈzaɾ	maz.ˈmo.hə	teɾ.mi.ˈno	dʒi.veɾ.ˈtʃi.ɾã

	irmão	ramadão	estudar	resolver	mostrar	aniversário
SP2	ɪɾ.ˈmɐ̃ʊ̯̃	xɐ̃.ma.ˈdan	ɪs.tu.daɾ	ɾe.zow.ˈveɾ	mos.ˈtɾaɾ	a.ni.veɾ.ˈsa.ɾiʊ̯̃
SP3	ih.ˈmɐ̃ʊ̯̃	xɐ̃.ma.ˈdɐ̃̃	es.tu.dah	xe.zɔw.ˈveɾ	mos.ˈtɾaɾ	a.ni.veɾ.ˈsa.ɾiʊ̯̃
SP7	ih.ˈmɐ̃ʊ	ɾɐ̃.ma.ˈdɐ̃ʊ̯̃	es.tu.daɾ	ɾe.zɔw.ˈveɾ	mos.ˈtɾaɾ	a.ni.veɾ.ˈsa.ɾiʊ̯̃
SP9	ɪɾ.ˈmɐ̃ʊ̯̃	xɐ̃.ma.ˈdɐ̃	es.tu.daɾ	xe.zɔw.ˈveɾ	mos.ˈtɾaɾ	a.ni.veh.ˈsa.ɾiʊ
SP10	ɪɾ.ˈmɐ̃ʊ̯̃	ɾɐ̃.ma.ˈdɐ̃ʊ̯̃	es.tu.ˈdaɾ	ɾe.zɔw.ˈveɾ	mos.ˈtɾaɾ	a.ni.veɾ.ˈsa.ɾiʊ̯̃
SP26	ɪɾ.ˈmɐ̃ʊ	xɐ̃.ma.ˈdɐ̃	ɪs.tu.ˈdah	xe.zɔw.ˈveɾ	mos.ˈtɾaɾ	a.ni.veɾ.ˈsa.ɾiʊ̯̃
SP27	ɪɾ.ˈmɐ̃ʊ̯̃	xɐ̃.ma.ˈdɐ̃	ɪs.tu.dah	xe.zɔw.ˈveɾ	mos.ˈtɾaɾ	a.ni.veɾ.ˈsa.ɾiʊ̯̃
SP28	ɪɾ.ˈmɐ̃ʊ	ɾɐ̃.ma.ˈdɐ̃ʊ̯̃	ɪs.tu.daɾ	xe.zɔw.ˈveɾ	mos.ˈtɾaɾ	a.ni.veɾ.ˈsa.ɾiʊ̯̃
SP31	ɪɾ.ˈmɐ̃ʊ̯̃	xɐ̃.ma.ˈdɐ̃ʊ̯̃	ɪs.tu.ˈdah	ɾe.zɔw.ˈveɾ	mos.ˈtɾaɾ	a.ni.veɾ.ˈsa.ɾiʊ̯̃
SP33	ɪɾ.ˈmɐ̃ʊ̯̃	ɾɐ̃.ma.ˈdɐ̃ʊ̯̃	ɪs.tu.dah	ɾe.zɔw.ˈveɾ	mos.ˈtɾaɾ	a.ni.veɾ.ˈsa.ɾiʊ̯̃
SP36	ɪɾ.ˈmɐ̃ʊ	ɾɐ̃.ma.ˈdɐ̃	ɪs.tu.ˈdaɾ	xe.zɔw.ˈveɾ	mos.ˈtɾaɾ	a.ni.veɾ.ˈsa.ɾiʊ̯̃
SP37	ɪɾ.ˈmɐ̃ʊ	ɾɐ̃.ma.ˈdɐ̃	ɪs.tu.da	xe.zɔw.ˈveɾ	mos.ˈtɾaɾ	a.ni.veɾ.ˈsa.ɾiʊ̯̃
SP43	ih.ˈmɐ̃ʊ̯̃	ɾɐ̃.ma.ˈdɐ̃	es.tu.ˈdaɾ	ɾe.zɔw.ˈveɾ	mos.ˈtɾaɾ	a.ni.veɾ.ˈsa.ɾiʊ̯̃
SP47	ɪɾ.ˈmɐ̃ʊ	ɾɐ̃.ma.ˈdɐ̃	ɪs.tu.daɾ	ɾe.zɔw.ˈveɾ	mos.ˈtɾaɾ	a.ni.veɾ.ˈsa.ɾiʊ̯̃
SP49	ɪɾ.ˈmɐ̃ʊ̯̃	xɐ̃.ma.ˈdɐ̃	ɪs.tu.dah	xe.zɔw.ˈveɾ	mos.ˈtɾaɾ	a.ni.veɾ.ˈsa.ɾiʊ̯̃

	melhorar	elixir	certificar	rápido	exagerar	vender
SP2	me.ʎo.'ɾaɾ	e.'li.ʃiɾ	seɾ.ti.fi.'kaɾ	'xa.pi.dʊ	e.za.ʒe.'ɾaɾ	vẽ.'deɾ
SP3	me.ʎo.'ɾaɾ	e.lik.'sih	seɾ.ti.fi.'kaɾ	'xa.pi.dʊ	ek.sa.ʒe.'ɾaɾ	vẽ.'deh
SP7	me.ʎo.'raɾ	e.'li.ʃiɾ	seɾ.ti.fi.'kaɾ	'ʁa.pi.dʊ	e.ʃa.ʒe.'ɾaɾ	vẽ.'deɾ
SP9	me.ʎo.'ɾaɾ	e.li.'ʃiɾ	seɾ.ti.fi.'kaɾ	'xa.pi.dʊ	za.ʒe.'ɾaɾ	vẽ.'deɾ
SP10	me.ʎo.'ɾaɾ	e.li.'ʃiɾ	seɾ.tʃi.fi.'kaɾ	'ɾa.pi.dʊ	ek.za.'ʒe.ɾaɾ	vẽ.'deh
SP26	me.ʎo.'ɾaɾ	e.li.'ʃiɾ	seɾ.ti.fi.'kaɾ	'xa.pi.dʊ	e.za.ʒe.'ɾaɾ	vẽ.'deɾ
SP27	me.ʎo.'ɾaɾ	e.li.'ʃiɾ	seɾ.fi.'kaɾ	'xa.pi.dʊ	ẽ.ʃa.'ge.ɾaɾ	vẽ.'deɾ
SP28	me.ʎo.'ɾaɾ	e.li.'ksiɾ	seɾ.ti.fi.'kaɾ	'xa.pi.dʊ	e.za.ʒe.'ɾaɾ	vẽ.'deɾ
SP31	me.ʎo.'ɾaɾ	e.lik.'siɾ	seɾ.ti.fi.'kaɾ	'xa.pi.dʊ	e.za.ʒe.'ɾaɾ	vẽ.'deh
SP33	me.ʎo.'ɾaɾ	e.lik.'siɾ	seɾ.ti.fi.'kaɾ	'xa.pi.dʊ	e.za.ʒe.'ɾaɾ	vẽ.'deh
SP36	me.ʎo.'ɾaɾ	e.li.'ʃiɾ	seɾ.ti.fi.'kaɾ	'xa.pi.dʊ	e.za.ʒe.'ɾaɾ	vẽ.'deɾ
SP37	me.ʎo.'ɾaɾ	e.li.'ʃiɾ	seɾ.ti.fi.'kaɾ	'xa.pi.dʊ	e.za.ʒe.'ɾaɾ	vẽ.'deɾ
SP43	me.ʎo.'ɾaɾ	e.li.'ʃiɾ	seɾ.ti.fi.'kaɾ	'xa.pi.dʊ	e.za.ʒe.'ɾaɾ	vẽ.'deɾ
SP47	me.ʎo.'ɾaɾ	e.li.'siɾ	seɾ.ti.fi.'kaɾ	'ɾa.pi.dʊ	e.za.ʒe.'ɾaɾ	vẽ.'deɾ
SP49	me.ʎo.'ɾaɾ	e.li.'ksiɾ	seɾ.tʃi.fi.'kaɾ	'xa.pi.dʊ	e.za.ʒe.'ɾaɾ	vẽ.'deɾ

	alcunha	algodão	arraial	balde	candil	alfinete	enxoval
SP2	al.ˈku.ɲə	al.go.ˈdɐ̃ʊ̯	a.ˈʀaɪl	ˈbal.dɪ	kɐ̃.ˈdl	al.fi.ˈne.tɪ	ĩ.ʃo.ˈval
SP3	al.ˈku.ɲə	al.goˈdõ	a.ʀi.ˈə	ˈbal.dɪ	kɐ̃.ˈdil	al.fi.ˈne.tɪ	ekʂ.ʃo.ˈvaw
SP7	al.ˈku.niə	al.go.ˈdɐ̃ʊ̯	a.ʁɪ.aw	ˈbal.dɪ	kɐ̃.ˈdʒil	al.fi.ˈne.tʃɪ	ẽ.ʃo.ˈvaw
SP9	al.ˈku.ɲə	al.go.ˈdɐ̃ʊ̯	a.xɪ.aw	ˈbal.dʒɪ	ka.ˈdʒil	al.fi.ˈne.tɪ	ʃo.ˈvaw
SP10	al.ˈku.ɲə	al.goˈdõ	a.ʀi.ˈaw	ˈbal.dʒɪ	ka.ˈdʒil	al.fi.ˈne.tɪ	ẽ.ʃo.ˈvaw
SP26	al.ˈku.ɲə	al.go.ˈdɐ̃ʊ̯	a.xɪ.aw	ˈbal.dɪ	kɐ̃.ˈdil	al.fi.ˈne.tɪ	ẽ.ʃo.ˈvaw
SP27	al.ˈku.ɲə	al.go.ˈdɐ̃ʊ̯	a.ʀɪˈal	ˈbal.dɪ	kɐ̃.ˈdiw	al.faɪ.ˈnet	ẽ.ʃo.ˈvaw
SP28	aw.ˈku.ɲə	aw.go.ˈdɐ̃ʊ̯	a.xaɪˈə	ˈbaw.dɪ	kɐ̃.ˈdiw	aw.fi.ˈne.tɪ	ẽ.ʃo.ˈvaw
SP31	aw.ˈku.ɲə	aw.go.ˈdɐ̃ʊ̯	a.ʀaɪ̯.ˈaw	ˈbaw.dɪ	kɐ̃.ˈdiw	aw.fi.ˈne.tɪ	ẽ.ʃo.ˈvaw
SP33	al.ˈku.ɲə	al.go.ˈdɐ̃ʊ̯	a.ʀiˈaw	ˈbaw.dɪ	kɐ̃.ˈdiw	aw.fi.ˈne.tɪ	ẽ.ʃo.ˈvaw
SP36	al.ˈku.ɲə	aw.go.ˈdɐ̃ʊ̯	a.xɪ.ˈaw	ˈbaw.dɪ	kɐ̃.ˈdiw	aw.fi.ˈnet	ẽ.ʃo.ˈvaw
SP37	al.ˈku.ɲə	al.go.ˈdɐ̃ʊ̯	a.xaɪ̯.ˈaw	ˈbaw.dɪ	kɐ̃.ˈdiw	al.fi.ˈnetʃ	ẽ.ʃo.ˈvaw
SP43	al.ˈku.ɲə	al.go.ˈdɐ̃ʊ̯	a.ʀaɪ̯.ˈaw	ˈbaw.dɪ	kɐ̃.ˈdil	aw.fi.ˈne.tɪ	ẽ.ʃo.ˈvaw
SP47	al.ˈku.ɲə	al.go.ˈdɐ̃ʊ̯	řaɪ̯.ˈaw	ˈbaw.dɪ	kɐ̃.ˈdiw	al.fi.ˈne.tɪ	ʃo.ˈvaw
SP49	kaw.ˈku.ɲə	aw.go.ˈdɐ̃ʊ̯	a.xaɪ̯.ˈaw	ˈbaw.dɪ	kɐ̃.ˈdiw	aw.fi.ˈne.tɪ	ẽ.ʃo.ˈvaw

	alfândaga	almoçar	aldeia	anil	especial	qual	acelga
SP2	al.'fã.de.gəs	al.mo.'saɾ	al.'deɪ.ə	a.'nil	es.pe.si.'aw	'kwal	a.'sɛl.gə
SP3	al.'fã.de.gə	al.'mo.sə	al.'deɪ.ə	a.'nil	es.pe.si.'al	'kwal	a.'sɛl.gə
SP7	al.'fã.de.ʒə	al.'mo.sə	al.'deɪ.ə	a.'niw	es.pe.si.'al	'kwaw	a.'sɛw.gə
SP9	al.'fã.di.gə	al.'mo.sə	al.'deɪ.ə	a.'niw	es.pe.si.'al	'kwal	a.'sɛw.gə
SP10	al.'fã.di.gə	al.'mo.sə	al.'deɪ.ə	a.'nil	es.pe.si.'aw	'kwaw	a.'sɛw.gə
SP26	al.'fã.de.gə	al.'mo.sə	al.'deɪ.ə	a.'nil	es.pe.si.'al	'kwal	a.'sɛl.gə
SP27	al.'fã.dɪ.gə	aw.mo.'sə	al.'deɪ.ə	a.'nil	es.pe.si.'al	'kwaw	a.'sɛl.gə
SP28	aw.'fã.dʒi.gə	aw.'mo.sə	al.'deɪ.ə	a.'niw	es.pe.si.'aw	'kwaw	a.'sɛw.gə
SP31	aw.'fã.de.gə	aw.'mo.sə	aw.'deɪ.ə	a.'niw	es.pe.si.'aw	no	no
SP33	aw.'fã.de.gə	al.'mo.sə	al.'deɪ.ə	a.'niw	es.pe.si.'al	no	no
SP36	aw.'fã.de.gə	al.'mo.sə	al.'deɪ.ə	a.'niw	es.pe.si.'aw	'kwaw	a.'sɛw.gə
SP37	aw.'fã.dʒi.gə	aw.'mo.sə	al.'deɪ.ə	a.'nil	es.pe.si.'aw	'kwal	a.'sɛl.gə
SP43	al.'fã.dɪ.gə	al.'mo.sə	al.'deɪ.ə	a.'nil	es.pe.si.'al	'kwaw	a.'sɛ.li.e.kə
SP47	aw.fã.'dɪ.gə	aw.'mo.sə	al.'deɪ.ə	a.'niw	es.pi.si.'aw	'kwaw	a.'sɛl.gə
SP49	aw.'fã.dʒɪ.gə	aw.'mo.sə	aw.'deɪ.ə	a.'niw	es.pe.si.'aw	'kaw	a.'sɛw.gə

	alecrim	alcaparra	almondega	alguém	musical	quintal	aval
SP2	a.le.'krĩ	al.ka.'pa.xə	al.'mõ.de.gə	al.'guẽɪ̯̂	mu.zi.'kal	kĩ.'tal	a.'val
SP3	a.le.'krĩ	al.ka.'pa.xə	al.'mõ.de.gə	al.'guẽɪ̯̂	mu.zi.'kal	kĩ.'tal	a.'val
SP7	a.le.'krĩ	al.ka.'pa.ʁə	al.'mõ.dze.kə	aw.'guẽɪ	mu.zi.'kal	kĩ.'tal	a.'val
SP9	a.le.'krim	al.ka.'pa.xə	aw.mõ.'de.gə	aw.'guẽɪ̯̂	mu.zi.'kal	kĩ.'tal	a.'vaw
SP10	a.le.'krĩ	al.ka.'pa.xə	aw.mõ.'de.gə	aw.'guẽɪ̯̂	mu.zi.'kal	kĩ.'tal	a.'vaw
SP26	a.le.'krĩ	al.ka.'pa.xə	al.'mõ.de.gə	al.'guẽɪ̯̂	mu.zi.'kal	kĩ.'tal	a.'val
SP27	al.'krĩ	al.ka.'pa.xə	al.'mõ.de.gə	al.'guẽɪ̯̂	mu.zi.'kal	kĩ.'tal	a.'val
SP28	a.le.'krĩ	aw.ka.'pa.xəs	aw.'mõ.de.gə	aw.'guẽɪ̯̂	mu.zi.'kaw	kĩ.'taw	a.'vaw
SP31	a.le.'krĩ	aw.ka.'pa.xə	aw.'mõ.dɪ.gə	aw.'guẽɪ̯̂	mu.zi.'kaw	kĩ.'taw	a.'val
SP33	a.le.'krĩ	al.ka.'pa.xə	al.'mõ.de.gə	aw.'guẽɪ̯̂	mu.zi.'kaw	kĩ.'taw	a.'vaw
SP36	a.le.'krĩ	al.ka.'pa.ʁə	al.'mõ.de.gə	aw.'guẽɪ̯̂	mu.zi.'kaw	kĩ.'taw	a.'vaw
SP37	a.le.'krĩ	aw.ka.'pa.xə	aw.'mõ.dʒɪ.gə	al.'guẽɪ̯̂	mu.zi.'kaw	kĩ.'taw	a.'vaw
SP43	a.le.'krĩ	al.ka.'pa.xə	al.'mõ.den.gə	aw.'guẽɪ̯̂	mu.zi.'kaw	kĩ.'taw	a.'val
SP47	a.le.'krĩ	aw.ka.'pax	al.'mõ.de.gə	aw.'guẽɪ̯̂	mu.zi.'kal	kĩ.'taw	a.'val
SP49	a.le.'krĩ	aw.ka.'pa.xə	aw.'mõ.dʒɪ.gə	aw.'guẽɪ̯̂	mu.zi.'kaw	kĩ.'taw	a.'val

	alcorão	alfombra	especialmente	álgebra	voltou
SP2	al.ko.ˈɾɐ̃ʊ̯	al.ˈfõ.bɾə	spe.ail.mẽ.tɪ	al.ˈʒe.bɾə	vol.ˈto
SP3	al.ku.ˈɾon	al.ˈfõ.bɾə	es.pe.si.al.mẽ.tɪ	al.ˈʒe.bɾə	vow.ˈto
SP7	al.ko.ˈɾɐ̃ʊ̯	al.ˈfõ.bɾə	es.pe.si.al.ˈmẽ.tʃɪ	al.ˈʒe.bɾə	vow.ˈto
SP9	al.ko.ˈɾɐ̃ʊ̯	al.ˈfõ.bɾə	spe.si.al.mẽ.tɪ	al.ˈʒe.bɾə	vow.ˈto
SP10	al.ko.ˈɾɐ̃ʊ̯	al.ˈfõ.bɾə	spe.si.al.ˈmẽ.tɪ	al.ˈʒe.bɾə	vow.ˈto
SP26	al.ko.ˈɾɐ̃ʊ̯	al.ˈfõ.bɾə	es.pe.si.al.ˈmẽ.tɪ	ˈal.ʒe.bɾə	vow.ˈto
SP27	al.ko.ˈɾɐ̃ʊ̯	al.fo.ˈam.bɾə	es.bes.bal.ˈmẽ.tɪ	al.ˈʒe.bɾə	vow.ˈto
SP28	aw.ko.ˈɾɐ̃ʊ̯	aw.ˈfõ.bɾə	es.pe.si.aw.ˈmẽ.tɪ	ˈaw.ʒe.bɾə	vow.ˈto
SP31	aw.ko.ˈɾɐ̃ʊ̯	aw.ˈfõ.bɾə	es.pe.si.aw.ˈmẽ.tɪ	aw.ˈʒe.bɾə	vow.ˈto
SP33	al.ko.ˈɾɐ̃ʊ̯	al.ˈfõ.bɾə	es.pe.si.aw.ˈmẽ.tɪ	al.ˈʒe.bɾə	vow.ˈto
SP36	al.ko.ˈɾɐ̃ʊ̯	al.mo.ˈfam.bɾə	es.pe.si.al.ˈmẽ.tɪ	aw.ˈʒe.bɾə	vow.ˈto
SP37	al.ko.ˈɾɐ̃ʊ̯	aw.ˈfõ.bɾə	es.pe.si.aw.ˈmẽ.tɪ	aw.ˈʒe.bɾə	vow.ˈto
SP43	al.ko.ˈɾɐ̃ʊ̯	al.ˈfõ.bɾə	es.pe.si.al.ˈmẽ.tɪ	aw.ˈʒe.bɾə	vow.ˈto
SP47	aw.ko.ˈɾɐ̃ʊ̯	ˈaw.fõ.bɾə	spe.sil.ˈmẽ.tɪ	ˈal.ʒe.bɾə	vow.ˈto
SP49	aw.k̟o.ˈɾɐ̃ʊ̯	aw.ˈfõ.bɾə	es.pe.si.aw.ˈmẽ.tɪ	ˈaw.ʒe.bɾə	vol.ˈto

	emir	arraial	região	artigos	diversos
SP2	e.ˈmiɾ	a.ɾaɪl	xe.ʒi.ˈãu̯	aɾ.ˈti.guz	di.ˈvɛɾ.sus
SP3	e.ˈmih	a.ɾi.ˈə	xe.ʒi.ˈõ	aɾ.ˈti.gus	di.ˈveɾ.sus
SP7	e.ˈmiur	a.ɾe.ə	xe.ʒi.ãu̯	ar.ˈti.guz	di.ˈveɾ.sus
SP9	e.ˈmiɾ	a.xe.aw	xe.ʒi.ãu	aɾ.ˈti.gus	di.ˈveɾ.su
SP10	e.ˈmiˇ	a.ɾɪ.ˈaw	ɾe.ʒi.ˈõ	aɾ.ˈti.gus	di.ˈveh.sus
SP26	e.ˈmiɾ	a.xaɪ̯.ˈaw	xe.ʒi.ˈãu̯	ar.ˈti.gus	di.ˈveɾ.sus
SP27	e.ˈmiɾ	a.ɾiˈal	ɾe.ʒi.ˈõ	aɾ.ˈti.gu	di.ˈveɾ.sus
SP28	e.ˈmiɾ	a.xaɪ̯.ˈaw	xe.ʒi.ˈãu̯	aɾ.ˈtʃi.gus	dʒi.ˈveɾ.sus
SP31	e.ˈmiɾ	a.ɾaɪ̯.aw	xe.ʒi.ãu̯	aɾ.ˈti.gus	di.ˈveɾ.sus
SP33	e.ˈmiɾ	a.xaɪ̯.aw	xe.ʒi.ãu̯	aɾ.ˈti.gus	di.ˈveɾ.sus
SP36	e.ˈmiɾ	a.xɪ.ˈaw	xe.ʒi.ˈãu̯	ar.ˈti.gus	dʒi.ˈveɾ.sus
SP37	e.ˈmiɾ	a.xaɪ̯.ˈaw	xe.ʒi.ˈãu̯	ar.ˈti.gus	dʒi.ˈveɾ.sus
SP43	e.ˈmiɾ	a.ɾaɪ̯.ˈaw	ɾe.ʒi.ˈõ	aɾ.ˈti.gus	di.ˈveɾ.sus
SP47	e.ˈmiˇ	ˇaɪ̯.ˈaw	xe.ʒi.ˈãu̯	aɾ.ˈtʃi.gus	dʒi.ˈveɾ.sus
SP49	e.ˈmiɾ	a.xaɪ̯.ˈaw	xe.ʒi.ˈãu̯	aɾ.ˈtʃi.gus	dʒi.ˈveɾ.sus

Appendix G: Individual Loanword Identification

SP1 acelga, açougue, alambique, alcaparra, alcorão, alcunha, aldeia, alecrim, alfândega, alfinete, alfombra, álgebra, algodão, almôndega, azar, azeite, azeitona, caravana, cuscuz, haji, haquim, de, Hasan, haxixe, hena, jasmim, mascate, masmorra, Mecca, mesquita, mufti, onde, quibe, ramada, sabão, sura, xarope, xeque-mate

SP2 acelga, álgebra, atum, azeite, azeitona, blusa, chá, cuscuz, girafa, haji, Hasan, Hasan, haxixe , hena, jasmim, Mecca, perfume, quibe, ramada, sabão, blusa,

SP3 alambique, alcorão, alfinete, almôndega, Anil, arraial, azeite, azeitona, azougue, na, balde, cuscuz, Emir, extravagâncias, haquim, Hasan, Hasan, haxixe, hena, jasmim, marfim, masmorra, mostrar, mufti, quibe, ramada, talco, tambor, xeque-mate

SP4 alcaparra, alcorão, alcunha, almôndega, alfinete, azeite, acelga, cuscuz, Emir, haji, haquim, haxixe, hena, Mecca, mufti, quibe, ramada, Toda, mascate

SP5 adobe, alambique, alcaparra, alcorão, alcunha, aldeia, alecrim, alfândega, alfinete, alfombra, álgebra, algodão, almoça, almôndega, Anil, arroba, azeite, azeitona, azougue, João, candil, caravana, chá, comprar, cuscuz, elixir, girafa, guitarra, haji, haquim, haxixe, hena, jasmim, mameluco, mascate, masmorra, Mecca, mesquita, mufti, para, quibe, ramadã , sura, xadrez, xeque-mate

SP6 acelga, açougue, adobe, alambique, alcaparra, alcorão, alcunha, alecrim, alfândega, alfinete, alfombra, álgebra, algodão, almôndega, Anil, arraial, arroba, azeite, azeitona, azougue, cuja, cada, candil, comida, cuscuz, elixir, Emir, festa, fulano, haji, haquim, Hasan, haxixe, hena, jasmim, mameluco, mascate, Mecca, mesquita, mufti, musical, quibe, ramada, sura, todos, xadrez

SP7 açougue, alcorão álgebra azeite, atum, azeitona, fulano,haxixe, Hasan,Mecca mesquita, mufti, sura, ramadã, haji, haquim , é, morango quibe sabão, xarope

SP8 alcunha, alcunha, alambique, alcaparra , alcorão, aldeia, alfândega, alfombra, álgebra, algodão, almôndega, arroba, azar, azeite, azeitona, azougue, candil, cuscuz, elixir, haji, haquim , Hasan, haxixe, jasmim, masmorra, Mecca, mesquita, mufti, quibe, ramada, sura

SP9 adobe, alcaparra, alcorão, alecrim, álgebra, arroba, atum, azeite, azeitona, candil, cuscuz, elixir , haji, haquim, haxixe, jasmim, mascate, masmorra, Mecca, mesquita, mufti, ramada, xeque-mate

SP10 adobe, alambique, alcorão, aldeia, alecrim, alfândega, algodão, Anil, arraial, atum, aval, balde, bar, candil, chá, chapéu, enxoval, guitarra, haji, haquim, haxixe, hena, jasmim, livros, marfim, mascate, Mecca, mufti, música, perfume, ramada, sabão, talco, tarifa, xadrez, xarope

SP11 Hasan, haji, haquim, mufti, ramadã

SP12 alcorão, alfombra, haji, haquim , Hasan, haxixe, Mecca, mesquita, mufti, quibe, ramada, sura, quibe

SP13 alfombra, azougue, elixir, Emir, haji, haquim, Hasan, haxixe, hena, mufti, quibe, ramada, sura

SP14 adobe, alcorão, alfombra, azougue, elixir, haji, haquim, Hasan, haxixe, hena, masmorra, Mecca, mufti, quibe, ramada, sura, Emir

SP15 alcorão, alfombra, azougue, candil, Emir, haji, haquim, Hasan, haxixe, hena, mufti, quibe, ramadã,

SP16 adobe, alcorão, aldeia, alfândega, alfombra, álgebra, algodão, azougue, elixir, Emir, haji, haquim, Hasan, Hasan, Hasan, haxixe, Mecca, mufti, quibe, ramadã

SP17 alcorão, alfombra, azougue, haji, haquim, Hasan, mesquita, mufti, ramada, sura, quibe

SP18 alcorão, alfombra, haquim, haxixe, mesquita, mufti, ramada, quibe

SP19 alcunha, alambique, alcaparra, alcorão, aldeia, alfândega, alfinete, alfombra, álgebra, algodão, alimentação, almôndega, haji, haquim, Hasan, haxixe, hena, Mecca, mesquita, mufti, quibe, ramadã, sura

SP20 alcunha, alcorão, alfinete, álgebra, algodão, alfombra, almôndega, arroba, azeite, azeitona, caravana, elixir, haquim, haxixe, hena, mesquita, mufti, quibe

SP 21 alcunha, alcorão, alfinete, álgebra, algodão, almôndega, arroba, azeite, azeitona, caravana, elixir, haquim, haxixe, hena, mesquita, mufti, quibe

SP22 algodão,acelga, alambique, alcorão, alecrim, alfândega, alfinete, Anil, arraial, azeite, azeitona, elixir, haji, haquim, haxixe, hena, mesquita, mufti, quibe, ramada, sura, xeque-mate

SP24 acelga, adobe, alambique, alcaparra, alcorão, aldeia, alecrim, alfândega, alfinete, alfombra, álgebra, almôndega, arroba, azeite, azeitona, azougue, candil, Emir,

fulano, haji, haquim, Hasan, haxixe, hena, jasmim, mameluco, masmorra, Mecca, mesquita, mufti, quibe, ramada, sabão, sura, tarifa, xarope, xeque-mate

SP25 alcunha, adobe, alcaparra, alfândega, alfombra, álgebra, almôndega, caravana, haji, haquim, haxixe, masmorra, mufti

SP26 acelga, açougue, alambique, alcaparra, alcorão, alcunha, aldeia, alecrim, alfândega, alfinete, alfombra, álgebra, algodão, Anil, arroba, azar, azeite, azeitona, azougue, candil, elixir, Emir, enxaqueca, haji, haquim, Hasan, haxixe, hena, jasmim, mameluco, Mecca, mufti, quibe, sabão, sura, talco, tarifa, xarope, xeque-mate

SP27 acelga, açougue, alambique, alcaparra, alecrim, alfândega, alfinete, alfombra, algodão, almoça, almôndega, atum, azeitona, chá, cuscuz, enxoval, fulano, giz, hena, jasmim, mascate, mesquita, quibe, sabão, tarifa, xarope, xeque-mate

SP28 acelga, alambique, alcaparra, alcorão, alcunha, aldeia, alecrim,alfândega, alfinete, álgebra, algodão, almôndega, Anil, arraial, arroba, atum, azar, azeite, azeitona, azougue, candil, Céu, cuscuz, elixir, enxaqueca, haji, haquim, Hasan, haxixe, hena, jasmim, mal-estar, mameluco, masmorra, mesquita, mufti, quibe, sabão, sura, tambor, tarifa, xarope, xeque-mate

SP29 acelga, açougue, adobe, alambique, alcaparra, aldeia, alecrim, alfândega, alfinete, alfombra, álgebra, algodão, almôndega, arroba, azar, azeitona, azougue, candil, caravana, cuscuz, Emir, enxaqueca, enxoval, frango, fulano, girafa, guitarra, haji, haquim, Hasan, haxixe, hena, jasmim, leilão, mameluco, marfim, mascate, masmorra, Mecca, mesquita, mufti, nuca, ramada, roque, sura, talco, tambor, tarefas, tarifa, xadrez, xarope, xeque-mate

SP30 alcunha, alambique, alcaparra, alcorão, alfinete, álgebra, algodão, almôndega, azeitona, azougue, caravana, elixir, haquim, Hasan, haxixe, hena, jasmim, mesquita, mufti, quibe, ramada, alcunha

SP31 algodão, alcorão, alfândega, alfinete, álgebra, azeite, azeitona, candil, elixir, giz haji, haquim, haxixe, hena, jasmim, masmorra, Mecca, mesquita, mufti, quibe, sabão, tambor, xadrez

SP32 acelga, alambique, alcaparra, alcorão, alcunha, aldeia, alecrim, alfândega alfinete, alfombra, algodão, almôndega, arraial, arroba aval, azeitona, balde, candil caravana, elixir, enxaqueca, enxoval, haji, haquim, Hasan, haxixe, hena, leilão mameluco, marfim, masmorra, mesquita, mufti, O, panela, quibe, quintal, sura, talco tarifa, xarope, xeque-mate

S33 alcunha, acelga, alambique, alambique, alcaparra, alcunha, alecrim, alfândega alfombra, álgebra, algodão, Anil, arraial, arroba, azeite, azeitona, azougue, festa, candil elixir, Emir, fulano, haji, haquim, Hasan, haxixe, haxixe, hena, jasmim, mameluco, mascate, Mecca, mesquita, mufti, quibe, sabão, sura, tambor

SP35 haji, haquim, Hasan, haxixe, mufti, quibe

SP36 alcorão, azeite, azeitona, candil, Emir, haji, haquim, Hasan, haxixe, hena jasmim, marfim, Mecca, mesquita, mufti, quibe, ramadã

SP42 alcorão, azougue, cuscuz, haji, Hasan, Mecca, mufti, quibe, ramadã

SP45 Emir, acelga, azeite, candil, haji, haquim, Hasan, haxixe, hena, jasmim, Mecca mufti, ramadã, sura, quibe,

SP46 haji, haquim, Hasan, Mecca, mesquite, ramadã, sura

SP47 alfândega, alfinete, Anil, candil, Emir, haji, João, Mecca, mufti, sabão, xeque-mate, João

SP49 alcorão, Emir, hají, haquim, Hasan, haxixe, hena, jasmim, quibe, ramadã

SP51 adobe, haji, haquim, Hasan, haxixe, hena, Mecca, quibe, ramadã, tambor

SP52 alcorão, alfinete, álgebra, emir, haji, haquim, Hasan, haxixe, hena, mascate, Mecca, mesquita, mufti, quibe, ramada, sura

S1 adobe, alcaparra, alcorão, alcunha, aldeia, alfandaga alfinete álgebra, almôndega, arrail, arroba, azougue, cuscuz, elixir, haji, haquim, haxixe, jasmim, mascate, mesquita, mufti, quibe, ramada, sura, tarifa

S2 adobe, alcorão, azouge elixir, jasmim, quibe, haji, hasan, haquim, haxixe, hena, Mecca mufti

S3 acougue, alfombra, enxaqueca, elixir, fulano, haji, haquim, haxixe, hena, mascate, Mecca, mufti, sura, roque

S4 alcorão alfombra, álgebra, arroba, azar, elixir, emir, giz, haji, Hasan, haxixe, hena, jasmine, mascate, Mecca, mesquita quibe, ramadã sura, xeque-mate

S5 none

S6 alfombra, azougue, haji, haxixe, haquim, hena, mufti, roque, sura

S7 alcorão, haji, haquim, Hasan, ramadã

S9 elixir, haji, haquim, Hasan, masmorra, Mecca, ramadã

S11 alcorão, caravana, haji, Hasan, Mecca, mesquita, mufti, ramadã sura

S12 alfombra, haji, Mecca, mufti, ramadã, sura

Appendix H: Individual Loanword Identification: Percentage Correct

Speaker ID	%Loanwords Identified
SP 29	77
SP 6	60
SP 5	60
SP 28	60
SP 26	60
SP 32	58
SP 24	54
SP 1	51
SP 8	46
SP 43	43
SP 10	38
SP 3	37
SP 8	35
SP 27	35
SP 19	34
SP 31	32
SP 7	31
SP 30	31
SP 39	28
SP 16	28
SP 36	26

Speaker ID	%Loanwords Identified
S 1	26
SP 52	25
SP 14	23
S4	22
SP 25	20
SP 2	20
SP 15	20
SP 13	20
SP 4	18
SP 33	18
SP 12	18
SP 51	15
SP 49	15
SP 38	15
SP 17	15
SP 47	14
SP 42	14
S2	14
S3	14
SP 37	14
SP 18	12
SP 40	9
S11	9
SP 11	8
S9	8
S6	6
S12	6
S7	5
S5	0

Appendix I: Abbreviations

ANOVA-Analysis of Variance

BP-Brazilian Portuguese

CA- Classical Arabic

H&H- Theory of Hypo and Hyper Speech

IPA- International Phonetic Alphabet

L1- First language

L2- Second Language

LA-Lebanese Arabic

LB- Lebanese Brazilian

LW-Loanword

MSA- Modern Standard Arabic

NOLW-Non-loanword

NNL- Non-native language

NNS-Non-native speaker

RQ-Research Question

SP-Subject Identification- (Subject is of Lebanese descent)

S- Subject Identification-Control Group (Subject is not of Lebanese descent)

SPSS-Statistical Package for Social Sciences

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